

MISSOURI STATE HEALTH PLAN

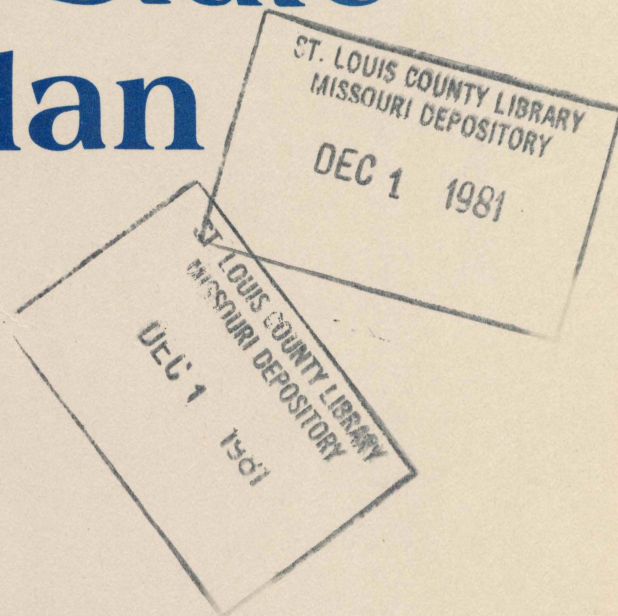
1982 EDITION
(Adopted June, 1982)



Missouri Health Coordinating Council
State Health Planning and Development Agency
Division of Health
Department of Social Services

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Missouri State Health Plan



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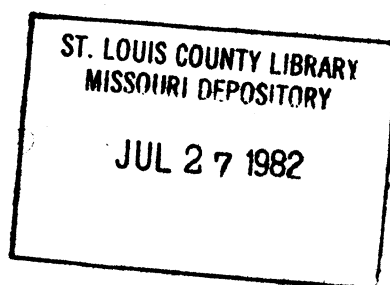


Missouri Health Coordinating Council
State Health Planning and Development Agency
Department of Social Services



"IT IS SAID THAT WE FACE A CRISIS IN MEDICINE TODAY . . .
WHEN THE CHINESE WRITE THE WORD "CRISIS," THEY DO SO
IN TWO CHARACTERS, ONE MEANING DANGER,
THE OTHER, OPPORTUNITY."

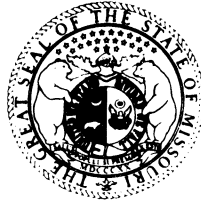
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JOHN ROMANO, M.D.
JOURNAL OF THE AMERICAN MEDICAL
ASSOCIATION (OCTOBER 26, 1964)



Enter



CHRISTOPHER S. BOND
GOVERNOR

MISSOURI
DEPARTMENT OF SOCIAL SERVICES
STATE HEALTH PLANNING
AND DEVELOPMENT AGENCY
BROADWAY STATE OFFICE BUILDING
P. O. BOX 88
JEFFERSON CITY
65103

Dear Friend:

The Missouri Health Coordinating Council is pleased to present the fourth Missouri State Health Plan. The Plan represents many months of hard work by dedicated volunteers, and the staff of the Missouri State Health Planning and Development Agency.

Many groups and individuals were involved in the development of the State Health Plan. The Planning Committee of the Missouri Health Coordinating Council reviewed the preliminary plan at every stage of its development and conducted a public hearing on the completed draft. Based on its review of the draft as well as the public comments received, the Committee made recommendations for modification to the full Council, which adopted the Plan at its June 11, 1982 meeting.

It is our desire that this Plan be viewed as establishing policies, that is direction, for use in the future development of the health and medical care systems in our State. The ideas presented are not static, but should be seen as our observation of the "best" alternatives to a given issue. Throughout the next year, and in the years to follow our efforts will be directed toward the development of an increasingly comprehensive document.

Your assistance, ideas, and guidance are always solicited and appreciated. I encourage you to call us and become involved in planning as a tool to help better the health care system.

Sincerely,

A handwritten signature in black ink, appearing to read "Marvin Kirby".

Marvin Kirby
Chairperson
Missouri Health Coordinating Council

MK:dt

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P. L. 93-641 AND P. L. 96-79 - THE NATIONAL HEALTH PLANNING AND RESOURCES DEVELOPMENT ACT AND AMENDMENTS

This law, passed in 1974 and amended in 1979, created a nationwide network of health planning agencies. The Health Systems Agencies, the State Health Planning and Development Agency, and the Statewide Health Coordinating Council were all formed as a result of this legislation. Other stipulations of the law are the development of Health Systems Plans and the enactment of Certificate of Need programs in each state. The law has two Titles (sections).

TITLE XV - Established the structure and function of the National Health Planning and Resources Development program.

TITLE XVI - Replaces the Hill - Burton Program (see Table 1).

MHCC - MISSOURI HEALTH COORDINATING COUNCIL

A consumer majority statewide body appointed by the governor which carries out the health planning functions as mandated by P.L. 93-641 and P.L. 96-79. Sixty percent of its membership is recommended by the Health Systems Agencies and forty percent of the council is composed of members at large. Among the duties of the MHCC is the preparation of the State Health Plan (see Table i).

SHPDA - STATE HEALTH PLANNING AND DEVELOPMENT AGENCY

This Agency is responsible for statewide planning under P. L. 93-641 and P. L. 96-79. The agency also administers the Certificate of Need program. The agency is staff to the Missouri Health Coordinating Council, assists the Health Systems Agencies in their planning functions (see Table i), and is located in the Department of Social Services.

HSA - HEALTH SYSTEMS AGENCY

Governor Bond on October 22, 1981 requested that Missouri be designated as a 1536 State and that funding for the five Missouri HSAs be terminated. The SHPDA has now assumed responsibility for health planning activities in the State.

PSRO - PROFESSIONAL STANDARDS REVIEW ORGANIZATIONS

These were created as a provision of Title XI of the Social Security Act of 1972. These organizations are established within states for review of the services provided under the Medicare, Medicaid, and Maternal and Child Health Programs. The reviews are designed to be attentive to problems of cost, quality control, and medical necessity.

DHHS - DEPARTMENT OF HEALTH AND HUMAN SERVICES (FORMERLY HEALTH, EDUCATION, AND WELFARE)

A Department in the Federal Government. Among its operating agencies are the Public Health Service and the Social Security Administration

RPC(s) - REGIONAL PLANNING COMMISSIONS

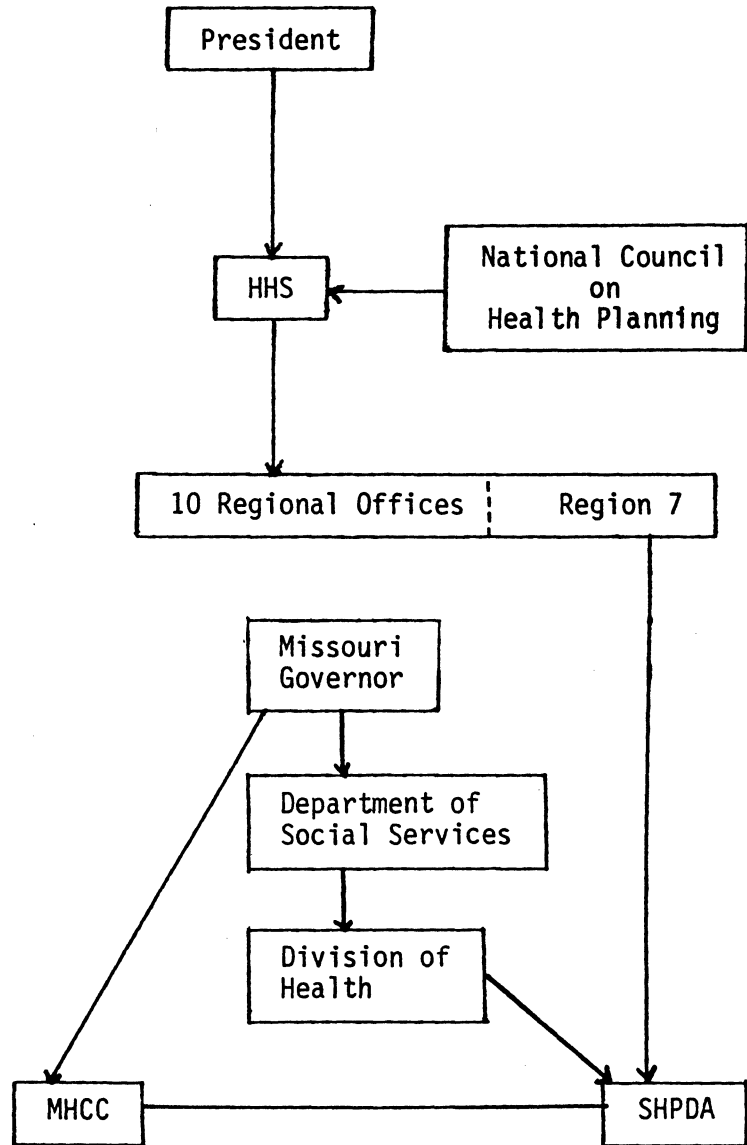
Missouri is served by 20 Regional Planning Commissions. They were formed in 1966 under R.S.Mo 251. The Commissions are made up of local units of government that join together voluntarily to provide services on a regional basis that each local unit would be unable to provide by itself. These Commissions are also required to do comprehensive planning. By law, they are only advisory bodies that have no governing, taxing, or regulating authority.

C/N - CERTIFICATE OF NEED

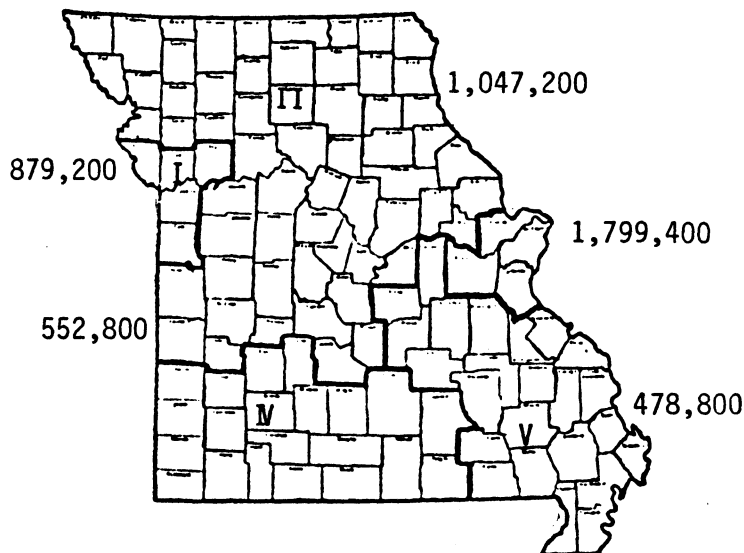
A program whose adoption by states is mandated by P. L. 93-641 which requires the issuance of a certificate of need to a health care facility that proposes to: (a) construct or modify the facility; (b) alter its services; or (c) purchase major equipment the cost of which exceed \$400,000. Its purpose is to control costs by preventing duplicative or excessive health facilities or services.

TABLE i: STRUCTURE OF HEALTH PLANNING SYSTEM

The structure of the nationwide health planning system includes the President of the United States, the Department of Health and Human Services (DHHS), the National Council on Health Planning, and the Regional Offices of DHHS. The structure continues in Missouri through the Governor, the Missouri Health Coordinating Council (MHCC), and the State Health Planning and Development Agency (SHPDA).



MISSOURI
HEALTH SERVICE
AREAS



There were five HSAs in Missouri covering the five Health Service Areas of the State. The HSAs were the most basic element in the national health planning system. The five HSAs were Health Service Area I, Mid-America Health Systems Agency; Health Service Area II, Area II Health Systems Agency; Health Service Area III, Greater St. Louis Health Systems Agency; Health Service Area IV, Southwest Missouri Health Systems Agency; and Health Service Area V, Missouri Area V Health Systems Agency Council, Inc. The numbers represent population statistics for each area.



USERS GUIDE TO THE 1982 MISSOURI STATE HEALTH PLAN

Health Plans tend to be confusing and difficult to read due to the complex nature of the subject. Finding a particular topic of interest within a plan may also be difficult. However, the Plan description contained in this section should enable a reader to better understand how he/she can find the information desired.

In this Edition of the Missouri State Health Plan, Chapter I is intended to familiarize the reader with background information; i.e., how did health planning develop, how are issues identified, what are the services necessary for health planning. This chapter should be read first in order to gain an understanding of the overall direction of the State Health Plan.

Chapter II discusses the overall health of Missourians and where we stand in respect to other States and the nation and presents an overall economic, demographic and geographic description of the State with particular reference to those topics that indirectly affect health. This chapter should enable the reader to understand both the direct and indirect causes of ill health in Missouri. It is organized as follows:

A. Health Status

This section includes an analysis of the populations present health status, identifying both direct health status indicators and "non-health" system elements which have a direct bearing on health status.

B. General Description of the State

This section establishes conclusions about relevant statistics and provides, where appropriate, a discussion of how the following characteristics affect the health status and health system of the State.

- Demographic Characteristics

A general narrative description of the area's population including population density, urban/rural characteristics, age/sex breakdown, and race characteristics.

- Sociological Characteristics

Data relative to the population's education and household composition is described.

- Economic Characteristics

Data relative to the State's income, housing, and employment is considered.

- Geographic Characteristics

Data relative to the State's general climate and topography is described (both natural and manmade). A general narrative description of the State's physical and manmade environmental factors is also included.

- Vital Statistics

Data relative to births, deaths, marriages, and divorces is described.

- Population Projections, Trends, and Analysis

Projections of the State's population, as well as its social, economic, geographic, and vital statistic characteristics is made (where applicable and appropriate).

Chapter III discusses where the State of Missouri stands in respect to preventing ill health and promoting good health while describing the health system as it now exists and how it could be under optimal conditions. This chapter also describes what Missouri is doing for individuals in our society in need of special care with emphasis on caring for our aged population. This chapter is the "hub" of the State Health Plan and, as such, is organized into the following categories:

Health Promotion

Services which encourage healthy lifestyles.

A. Lifestyle Development

Educational services which inform and motivate the public to adopt practices which promote optimal physical and mental health.

B. Risk Avoidance

Educational services which inform and motivate the public to adopt practices in order to avoid health risks.

Health Protection

Services which improve environmental factors affecting health.

A. Environmental Health Management

Activities which enhance the environment and protect the community from hazards and promote improved personal health care. Environmental hazards are categorized into those relating to the physical environment (air, water, noise pollution, radiation safety and waste management); the occupational environment (health and safety); and the residential environment (housing and residential hazardous control and food protection and food quality).

B. Biomedical and Consumer Product Safety

Measures which should be taken to ensure that drugs, cosmetics, therapeutic and diagnostic devices and other consumer products are safe and clearly labeled as to their proper use.

C. Special Issues

Issues which cross all areas of the environment and which should be looked at globally. Measures which should be taken to ensure coordination of agencies activities' to prevent environmentally induced illness.

Individual Prevention, Detection, and Referral

Services provided to individuals which promote optimal physical and mental well-being, through prevention, early detection and protection from disease or disability; early identification or detection of disease, ill-health, or disability at the presymptomatic or unrecognized symptomatic state to permit early intervention; and assistance in entering the service delivery system at the appropriate intake point.

A. Preventive Health Services

Early intervention activities which render an individual protected against disease and assist in assuring well-being of potential offspring.

B. Detection

Screening of at-risk individuals to identify those who have a high probability of being ill or disabled.

C. Referral

Activities which assure appropriate placement of persons within the health system.

Diagnosis and Treatment

Services for identifying and alleviating disease, ill health, or disability.

A. Emergency

Services which respond to the perceived need for immediate physical and mental health care.

B. Diagnosis and Treatment

Services which identify disease and disabilities and which intervene in acute disease and disabilities.

- Maternal and Child Health
- Outpatient/Primary Care Services
- Mental Health Services

Maintenance

Services provided to individuals to preserve an existing functional level as well as assist them in daily living activities.

A. Clinical

Physical and psychological interventions designed to preserve an existing functional level.

B. Non-Clinical

Services which assist individuals in daily living activities.

Rehabilitation and Habilitation

Services to restore or improve the functioning capability of individuals. These include physical, medical, psychological, social, vocational, educational, housing, and economic.

A. Rehabilitation

Services which ameliorate impairments and facilitate an individual's capability to function.

B. Habilitation

Services which assist an impaired person's ability to live in the community.

Ancillary Services

Mechanisms which facilitate the provision of health services.

A. Individual and Family

Services which eliminate or alleviate social, legal, psychological, or physical barriers to the optimal use of health care services, promote attainment of the most satisfactory lifestyle possible, and assure protection of individual rights.

B. Clinical

Patient services which facilitate the provision of health care.

C. Administrative

Services concerned with the functioning of programs and institutions.

Systems Development

Organized activities designed to influence the means by which, and the conditions under which, services are delivered.

A. Planning

Processes which articulate community expectations, specify goals and objectives, establish alternative actions, cite steps for implementation of selected actions, and compare actual to intended results.

B. Resource Allocation

Activities designed to assure an appropriate supply of health personnel, facilities, and equipment.

C. Regulation and Quality Assurance

Procedures and regulations which influence, control, set standards, or evaluate services, personnel, equipment, and facilities.

D. Financing and Cost Effectiveness

The sources and methods of financing resources.

E. Research

A scientific approach to investigation of factors relating to health status and the performance of the health system.

F. Evaluation

A systematic analysis of data and information to assess the progress toward the achievement of goals, objectives, and recommended actions.

Chapters IV and V describe the Missouri Health Coordinating Council's priority areas for implementation and priority areas for future development of the plan. These chapters are based on the Missouri Health Coordinating Council's own priorities and comments received on the State Health Plan.

There are also appendices to the State Health Plan. These include the Data Appendix and the Medical Facilities Appendix. The Data Appendix contains figures, maps, and tables discussed in the State Health Plan. The second document, the Medical Facilities Appendix, includes an inventory of health resources in the State of Missouri (e.g., acute care, long-term care, CT Scanner, etc.), methodologies for determination of need for health resources, and a summary assessment of the need for physical plant changes within the health system. This document is directly linked with Chapter III of the State Health Plan and is considered a major part of it.

Since a particular topic may be addressed in more than one chapter or section of the Plan, an index is included at the end. A basic glossary is also included at the beginning of the plan to assist the reader in understanding new and unfamiliar terms. One result of maintaining a dynamic plan is that editorial style and completion dates may be inconsistent as selected components are revised.

PUBLIC PROCESS
AND
SUMMATION OF COMMENTS

During May and early June, 1982, the public was given the opportunity to comment on the final draft of the Missouri State Health Plan as approved by the Missouri Health Coordinating Council. Consistent with Federal requirements, public notification of the hearing and review process was published in major newspapers throughout the State. In addition to the Plan being generally available and publicized through the State, individuals and specific interest groups were personally contacted and input solicited. These included, but were not limited to:

1. the Office of the Governor;
2. numerous officials in the Executive Branch;
3. the leadership and interested State senators and representatives of the General Assembly;
4. the entire Missouri Congressional Delegation;
5. many key State officials;
6. the 20 Regional Planning Commissioners (to reach local elected officials);
7. the Area Agencies on Aging;
8. local Health and Family Services Offices;
9. university and college officials;
10. professional provider associations;
11. the five Professional Standard Review Organizations;
12. the 18 Community Action Agencies (to reach the less affluent and minorities); and
13. voluntary health associations.

All of the above, as well as the general public, were specifically encouraged to respond verbally and in writing to specific issues and concerns raised in the Plan. Finally, on June 10, 1982, a public hearing was held which offered a formal setting for testimony relative to the Plan. Comments received as a result of this step and the formal input were reviewed by the Missouri Health Coordinating Council and, were deemed beneficial to the overall scope and direction of the Plan, were included in the Plan which was finally approved on June 11, 1982.



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CHAPTER I: INTRODUCTION AND BACKGROUND

OVERVIEW

The Concept and Determinants of Health

Ensuring a generally high level of health has become one of the preeminent social goals of this country and of Missouri. In its constitutional commitment to promote the "general welfare" of the populace, Missouri recognizes that good health is a fundamental requirement of the quality of life which its citizens desire and can attain.

On examining the status of health and of health care delivery today, the necessity for a broader, dynamic concept of health has emerged. No longer is health care merely the provision of care for an illness or disease. Rather, the individual's social and mental, as well as physical, needs play an ever increasing role in determining his/her level of health.

Acceptance of this broader view of health and disease (i.e., health is more than merely the absence of disease and illness) leads to a broader view of the functions of the health care system. "A health care system must include approaches to both individuals and populations."¹ The health care system should, therefore, embrace an ecological or holistic approach. In designing health strategies which utilize this approach, we must look beyond the symptoms to the determinants of disease. The system, then, should seek to affect the entire range of factors, including medical care, which contributes to the health of individuals and the population as a whole.

In 1974, the Canadian Minister of Health and Welfare, Marc Lalonde, proposed a conceptual framework called the "Health Field Concept" within which the determinants of health can be studied from a policy perspective.² The "Health Field Concept" assumes that health is a function of four determinants: life style, environment, heredity, and the health care system.

It has been known for some time that behavior patterns such as cigarette smoking, overeating, lack of exercise, high stress occupations, and excessive consumption of alcohol have negative effects on health. In spite of this awareness, however, only relatively small advances in the reduction of these self-imposed risks have been made. Indeed, only a few studies have been attempted which identify specific health promoting activities. We understand life style is a key factor; however, we know more about health threatening than health enhancing habits.

The environmental hazards to well-being are largely manmade and are the result of urbanization, industrialization, population increases, and the continued expansion of technology.³ Perhaps the most widely known consequence of environmental contamination is cancer. The incidence of cancer has risen rapidly since the early part of this century. Presently, it is the cause of death three times more than in 1911. In addition, environmental factors may interact with genetic and life style factors in a way that is deadly, yet difficult to trace to a specific determinant.

By examining all four components of health we can gain a better understanding of the causes of contemporary illness. More importantly, we can

identify what actions need to be initiated to remove or reduce the causes, and also, who should initiate them. By developing strategies aimed at the prevention and early detection of illness, society can best hope to lessen premature mortality and morbidity and thus protect its investment in human resources.

The Current Approach to Health

The vast growth in resources devoted to health care is a striking testimony of the growing social commitment to health in this country. Indeed, from 1960 to 1976 National health expenditures increased by over 500 percent. The policies of government, the emphasis on the training of health professionals, and the behavior of individuals tend to reflect the orientation that the level of health has been synonymous with the level of medical care through the diagnosis and treatment of illness and disease.

As expenditures for health care have consumed an ever increasing portion of society's scarce resources, the strategy to secure health has come under criticism, not for what is being done in medicine, but rather for changes that are not being made in the areas of life style and the environment. Future expenditures intended to improve health must undergo an evaluation based on two important and related questions.

1. What are the benefits to society in terms of improved health status?
2. Can society afford the costs of this approach?

In general, there is a high degree of public confidence in the delivery of medical care. This is understandable in light of the advances that have been made in the field of medicine. The application of medical knowledge has been notably successful in the control of serious infectious diseases. With the development of vaccines and antibiotics as effective preventive and therapeutic interventions, the once dreaded diseases of smallpox, and polio have been virtually eliminated. Over the years, biomedical research has increased the variety of sophistication of methods to diagnose and treat even the most exotic illnesses. The vast array of medical technology routinely available in modern hospitals is often viewed as further testimony of the health care system's capability to solve our health problems. As a consequence, increasing reliance has been placed on the medical care systems as the prime mover in promoting society's well-being. The wisdom of this singular reliance is now being challenged.

Recently, an assessment of the Nation's health and health care delivery system by Congress and the President, as well as the major professional associations and the Nation's consumers, has tended to support the idea that society must begin to direct more resources to the other determinants of health. This becomes increasingly necessary if we are to achieve our priorities within reasonable cost constraints. The challenge is to establish policies which will guide public and private efforts toward a more balanced approach to our complex health priorities.

An important factor influencing this shift in attitude has been the recognition of medicine's limitations in dealing with the current major illnesses. The decline of man's age-old health enemies has been accompanied by an increased incidence of the so-called ills of an affluent society. Heart disease, cancer, accidents, and various chronic diseases now constitute the leading causes of death and disability in this country. These illnesses have not, however, readily yielded to reduction through medical intervention.

The nature of current chronic disease differs, for example, from the serious health problems of the past. The certainty of a specific causative agent, such as a bacterial strain, is not present in these degenerative diseases. Rather, they arise from a variety of factors, few of which can be readily controlled by medical care practitioners. Medical knowledge has been able to lessen the physical pain and in some cases forestall the progression of the disease, representing an important and needed contribution. However, a meaningful reduction in the incidence of today's "leading killers" will probably only occur if we focus more energy on their underlying causes. Moreover, a multifaceted approach may significantly reduce the personal and financial expense often associated with after-the-fact treatment of disease.

Economic Characteristics of the Health Care Market

Planning may be a desirable alternative to governmental regulation for those sectors of the economy where the market does not attain equilibrium on its own. From an economic point of view, the health care industry operates within a series of legislated and historically developed exceptions to the basic competitive model. Although many of the exceptions have benefit for the consumer, the exceptions remain significant for planned intervention. First, the profit motive, which underlies most of the country's economic activity, is largely absent in the industry. Without regard for the merits of justification of this fact, institutions under voluntary control receive special financial privileges and, generally, are highly regarded for not making a profit. Often not-for-profit organizations operate under the assumption that they need only "break even". Such an assumption may cause an organization to lose its incentive to operate efficiently and effectively.

A second factor is the prevalence of third party financing. This aspect of the sector diminishes the influence of price on consumption, which may in turn lead to incentives for over-utilization. Indeed, once insured, consumers are apt to regard the price of services at the point of consumption as free, thereby removing one important factor in a competitive market determination of demand.

A third factor is the industry's restriction on pure competition. Specifically in the health care sector, many direct delivery organizations enjoy a natural monopoly due to geography, to maldistribution, and/or to population density. Given that fees and charges are set by individual providers and institutions, there can be a tendency toward price discrimination, i.e., varying fees with the income of patients. Another variation of the health care industry from competitive theory is in the area of price competition. In medical practice, the use of price as a competitive instrument is considered unethical.

Competition further stipulates that for the market to function properly, consumers of the product or service must be well informed and must be aware of the effects of the purchase. In fact, very few industries could be named where consumer is more dependent on the provider for information concerning the product or service. Frequently, the emergent consumer is in no position to shop for the "best buy," but rather must take that care which is available and prescribed.

As a result of this discussion, the general consensus is that intervention through planning may be desirable to assist the health care system in improving its efficiency and effectiveness in identifying and then meeting the health needs of the population.

STATUTORY AUTHORITYThe National Health Planning and Resources Development Act

The National Health Planning and Resources Development Act of 1974, Public Law (P.L.) 93-641, (Titles XV and XVI of the Public Health Service Act) as amended by the Health Planning and Resources Development Amendments of 1979 (P.L. 96-79), requires that the Missouri State Health Planning and Development Agency (SHPDA) perform the following planning functions:

1. Conduct the health planning activities of the state and implement those parts of the State health plan and the plans of the health systems agencies within the State which relate to the government of the State.
2. Determine the statewide health needs of the State after providing reasonable opportunity for the submission of written recommendations respecting such needs by the State health authority, the State mental health authority, and other agencies of the State government, designated by the Governor for the purpose of making such recommendations and after consulting with the Statewide Health Coordinating Council.
3. Prepare, review at least triennially, and revise as necessary a preliminary State health plan which shall be made up of the HSPs [Health System's Plan] of the health systems agencies within the State. In carrying out its functions under this paragraph, the State Agency shall refer the HSPs to the State authority, the State mental health authority, and other agencies of the State government (designated by the Governor to make the review prescribed by this sentence) to review the goals and related resource requirements. Such preliminary plan may as found necessary by the State Agency contain such revisions of such HSPs to achieve their appropriate coordination or to deal more effectively with statewide health needs determined under paragraph (2). Such preliminary plan shall be submitted to the Statewide Health Coordinating Council of the State for approval or disapproval and for use in developing the State health plan referred to in section 1524(c).
4. Assist the Statewide Health Coordinating Council of the State in the performance of its functions generally.
5. Review on a periodic basis (but not less often than every five years) at least those institutional and home health services which are offered in the State and with respect to which goals have been established in the State health plan and, after consideration of recommendations submitted by health systems agencies under section 1513(g) respecting the appropriateness of such services, make public its findings. In making the appropriateness review required by this paragraph of a health service, the State Agency shall at least consider the need for the service, its accessibility and availability, financial viability, cost effectiveness, and the quality of service

6. Prepare an inventory of the health care facilities (other than Federal health care facilities) located in the State and evaluated on an ongoing basis the physical condition of such facilities. Such inventory and evaluations shall be reported to the health systems agencies designated for health service areas located (in whole or in part) in the State for purposes of the functions of the agency under section 1513(b).

The National Health Planning and Resources Development Act as amended requires that the Missouri Health Coordinating Council (MHCC) [referred to in the Act as "Statewide Health Coordinating Council" (SHCC)] perform the following planning functions:

1. Establish (in consultation with the health systems agencies in the State and the State Agency) a uniform format for HSPs and review and coordinate at least triennially the HSP and review at least annually the AIP [annual implementation plan] of each health systems agency within the state and report to the Secretary for purposes of his review under section 1513(c), its comments on such HSP and AIP.
2. (A) Prepare, review at least triennially, and revise as necessary a State health plan which shall be made up of the HSPs of the health systems agencies within the State. Such plan may, as found necessary by the SHCC, contain revisions of such HSPs to achieve their appropriate coordination or to deal more effectively with statewide health needs as determined by the State Agency of the State. The plan shall also describe the institutional health services...needed to provide for the well-being of persons receiving care within the State, including, at a minimum, acute inpatient (including psychiatric inpatient, obstetrical inpatient, and neonatal inpatient), rehabilitation, and long-term care services; and also describe other health services needed to provide for the well-being of persons receiving care within the State, including, at a minimum, preventive, ambulatory, and home health services and treatment for alcohol and drug abuse. The plan shall also describe the number and type of resources, including facilities, personnel, major medical equipment, and other resources required to meet the goals of the plan and shall state the extent to which existing health care facilities are in need of modernization, conversion to other uses, or closure and the extent to which new health care facilities need to be constructed or acquired. Each health systems agency which participates in the SHCC shall make available to the SHCC its HSP for integration into the State health plan and shall, as required by the SHCC, revise its HSP to achieve appropriate coordination with the HSPs of the other agencies which participate in the SHCC or to deal more effectively with Statewide health needs as determined by the State Agency of the State.

(B) In the preparation and revision of the State health plan, the SHCC shall review and consider the preliminary State health plan submitted by the State Agency under section 1523(a)(2), and shall conduct a public hearing on the plan as proposed and shall give

in writing. Not less than thirty days prior to any such hearing, the SHCC shall publish in at least two newspapers of general circulation the State a notice of its consideration of the proposed plan, the time and place of the hearing, the place at which interested persons may consult the plan in advance of the hearing, and the place and period during which to direct written comment to the SHCC on the plan. If in preparing or revising the State health plan the SHCC does not take an action proposed in a recommendation submitted under section 1523(a)(1)(B), the SHCC shall when publishing such a plan make available to the public a written statement of its reasons for not taking such action.

(C) The State health plan or any revised State health plan approved by the SHCC shall be the State health plan for the State for purposes of this title after it is approved by the Governor of the State. The State health plan for a State may be disapproved by the Governor of the State only if the Governor determines that the plan does not effectively meet the statewide health needs of the State as determined by the State Agency for the State. In disapproving a State health plan, a Governor shall make public a detailed statement of the basis for the determination that the plan does not meet such needs and shall specify the changes in the plan which the Governor determines are needed to meet such needs. Subparagraph (B) does not apply to the preparation of revisions of a State health plan disapproved by a Governor.

(D) In carrying out its functions with respect to the goals and resources requirements for mental health services of the State health plan, the SHCC may establish a procedure under which persons (acting as or part of an advisory group or subcommittee appointed by the SHCC) knowledgeable about mental health services (including services for alcohol and drug abuse) will have the opportunity to make recommendations to the SHCC respecting such services.

(E) The State health authority, the State mental health authority, and other agencies of State government designated by the Governor, shall carry out those parts of the State health plan which relate to the government of the State.

In addition, the National Guidelines for Health Planning require that:

...Since HSPs must individually give appropriate consideration to the National Guidelines for Health Planning and take into account and be consistent with the Standards respecting the supply, distribution, and organization of health resources, the State health plan will accordingly reflect the Guidelines.

State Statutes

Executive Order

Pursuant to the Health Planning Amendments of 1979, P.L. 96-79, and Executive Review, the Missouri Health Coordinating Council and the State Health

Planning and Development Agency were afforded statutory authority first under Executive Order 79-21 signed by Governor Teasdale on June 14, 1979, and then again through Executive Order 80-17 signed on May 1, 1980 by Governor Teasdale. This Executive Order further charges the Council and Agency with fulfilling the requirements of Federal law.

Certificate of Need, RSMo, 197.300-365

The Missouri Certificate of Need statute became effective September 28, 1979 except for those provisions listed in the statute as effective October 1, 1980. Under the Certificate of Need law capital expenditures for new institutional health services by health care facilities are subject to review by the Missouri Health Facilities Review Committee, with recommendations to the committee from the five Health Systems Agencies. The State Health Planning and Development Agency provides clerical and administrative support to the committee.

MISSION OF THE MISSOURI HEALTH COORDINATING COUNCIL

In recognition of its responsibilities to serve as a leader and as an agent for improvement in the health care sector, the Missouri Health Coordinating Council (MHCC) has adopted the following mission statement to help guide the Council's health initiatives:

To serve as an agent of change that will bring about a health system that meets the needs of all Missouri citizens, through the maintenance of wellness, prevention and treatment of illness, and by being open to alternate systems that will assure that every citizen has quality health care which is cost effective.

AGENCY HISTORY AND RESPONSIBILITIES

The enactment of the National Health Planning and Resources Development Act, P.L. 93-641, in 1975 initiated a new era in health planning. Prior to P.L. 93-641, health planning and resource development activities were conducted under three separate programs:

1. The Hospital Survey and Construction Act (Hill-Burton), P.L. 79-725;
2. The Heart, Cancer, and Stroke Amendment, P.L. 89-239, Regional Medical Program (RMP); and
3. The Public Health Service Amendments, P.L. 89-749, (The Partnership for Health Act, Comprehensive Health Planning).

Hill-Burton Program

In 1946, Congress approved the Hospital Survey and Construction Act known as the Hill-Burton Program. The Act was originally intended to finance hospital construction in rural areas and to finance the replacement of obsolete hospitals, and add beds in predominantly urban areas.

In Missouri the Program became operational in 1949 when the legislature designated the Division of Health as the target agency to implement the law. Since that time over 235 projects have been reviewed and approved for funding.

Regional Medical Program

Congress passed the Heart Disease, Cancer, and Stroke Amendments to the Public Health Service Act in 1965. The Act created the two Regional Medical Programs that were established in Missouri.

The programs called for cooperative arrangements among all members of the health system including research institutions in order to make available the latest advancements in the diagnosis and treatment of heart disease, cancer, and stroke. Kidney disease was added to the program in 1970 as the approach became more regionalized in nature.

Comprehensive Health Planning

Preceding the establishment of the National Health Planning and Resource Development Act, P.L. 93-641, Missouri had an Office of Comprehensive Health Planning (hereafter referred to as the Office) which was established in 1966. The establishment of this office, based on the passage of the Comprehensive Health Planning and Public Health Service Act of 1966, P.L. 89-749, was the first major attempt on both a Federal and State level to plan for health services.

During the period between 1966 and 1976, the Office undertook many major projects. These projects were highly successful in identifying the numbers and

The Office was also involved in establishing six designated "B" agencies, which were the local health planning agencies under P.L. 89-749. These agencies encouraged and provided local participation in health planning. Three of the agencies also developed an areawide health plan as a part of their function.

In 1975, a major change took place in health planning when the National Health Planning and Resources Development Act, P.L. 93-641, was signed into law. The major premise in the passage of this law was that duplication, overlap, and fragmentation within the existing programs would continue unless a concerted effort was made to consolidate resources and stimulate a cooperative approach to reforming the United States health system. The three previously described programs were phased out and a new program was initiated. This program (under P.L. 93-641) created a single set of structures at the State and Regional levels to deal with planning, resource allocation, and regulation.

In Missouri, a proposal to establish five health service areas was submitted to the Secretary of the Department of Health, Education, and Welfare (DHEW, currently, the Department of Health and Human Services) on May 2, 1975. Pursuant to this proposal, the Secretary approved the conditional designation of the five areas. On September 1, 1976, DHEW approved the application for conditional designation submitted by the Department of Social Services, Division of Special Services as the State Health Planning and Development Agency. Following the designation of the SHPDA in September, the Missouri Statewide Health Coordinating Council was established as a Commission and appointments were made by Governor Bond in December, 1976. This position was reevaluated when Governor Teasdale issued an Executive Order reforming and reorganizing the Statewide Health Coordinating Council in 1979. Executive reevaluation again took place in April, 1980, culminating in the issuance of another Executive Order on May 1, 1980, by Governor Teasdale giving full authorization to the Missouri Health Coordinating Council (MHCC) (changed from SHCC) and SHPDA to perform their functions. The Missouri Health Coordinating Council's membership now consists of thirty-one members, twenty picked from HSA nominations, ten at-large, and one Veterans Administration representative. All members except the Veterans Administration representative are appointed by the Director of the Department of Social Services with the consent of the Governor.

The revised State Health Plan for fiscal year 1980 will be the basis for carrying out the majority of the SHPDA's and MHCC's responsibilities. The following is a list of those responsibilities, including those mandated by law:

1. implement those parts of the State Health and Health Systems Plans which relate to the Government of the State;
2. review the Medical Facilities Appendix of the State Health Plan;
3. review and coordinate the Health Systems Plans and Annual Implementation Plans of each HSA;
4. execute the activities of the State's 1122 and/or Certificate of Need program;
5. review all proposed new institutional health services;

6. review and make findings with respect to the appropriateness of any existing institutional health service.
7. review and approve or disapprove any State plan, and any application, as a condition for receipt of Federal funds under allotments made to States under:
 - a. The Public Health Service Act
 - b. The Comprehensive Community Mental Health Centers Act
 - c. The Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act of 1970;
8. guide the resource allocation in the development of health services, health manpower, and medical facilities;
9. implement activities identified with health policies; and
10. establish priorities for changes in the health system of the State which are consistent with State and National priorities.

PURPOSE AND USE OF THE STATE HEALTH PLAN

Philosophy

Planning as a Method for Redirection and Intervention

Planning is an approach for making conscious choices about the future and directing efforts toward achieving those choices. With the ever-increasing complexity and differentiation of our society, the need for rational and systematic decision-making has become more acute in virtually every human enterprise. Planning is an integral function of such decision-making. It seeks to assure that a defensible process is used to establish desired results and to specify how these results may be achieved (see diagram on following page).

The whole idea of planning assumes the possibility of choice among alternative and feasible solutions to some kind of problem. Feasibility is the key word. The design of a plan which seeks to find and implement a solution raises the question: What kind of performance is desired and in what terms should it be expressed?

Performance is most often expressed in monetary and/or social objectives which have been established as desirable through a formalized, yet open, process. The most important purpose of planning is to coordinate the market in such a way as to reach these objectives. Plans are schedules, not straight-jackets; however, if the unknown does occur (i.e., if crops fail, if oil prices skyrocket, or if alternatives cost more), it is better to have objectives that can be modified and alternatives already identified than to have no direction at all.

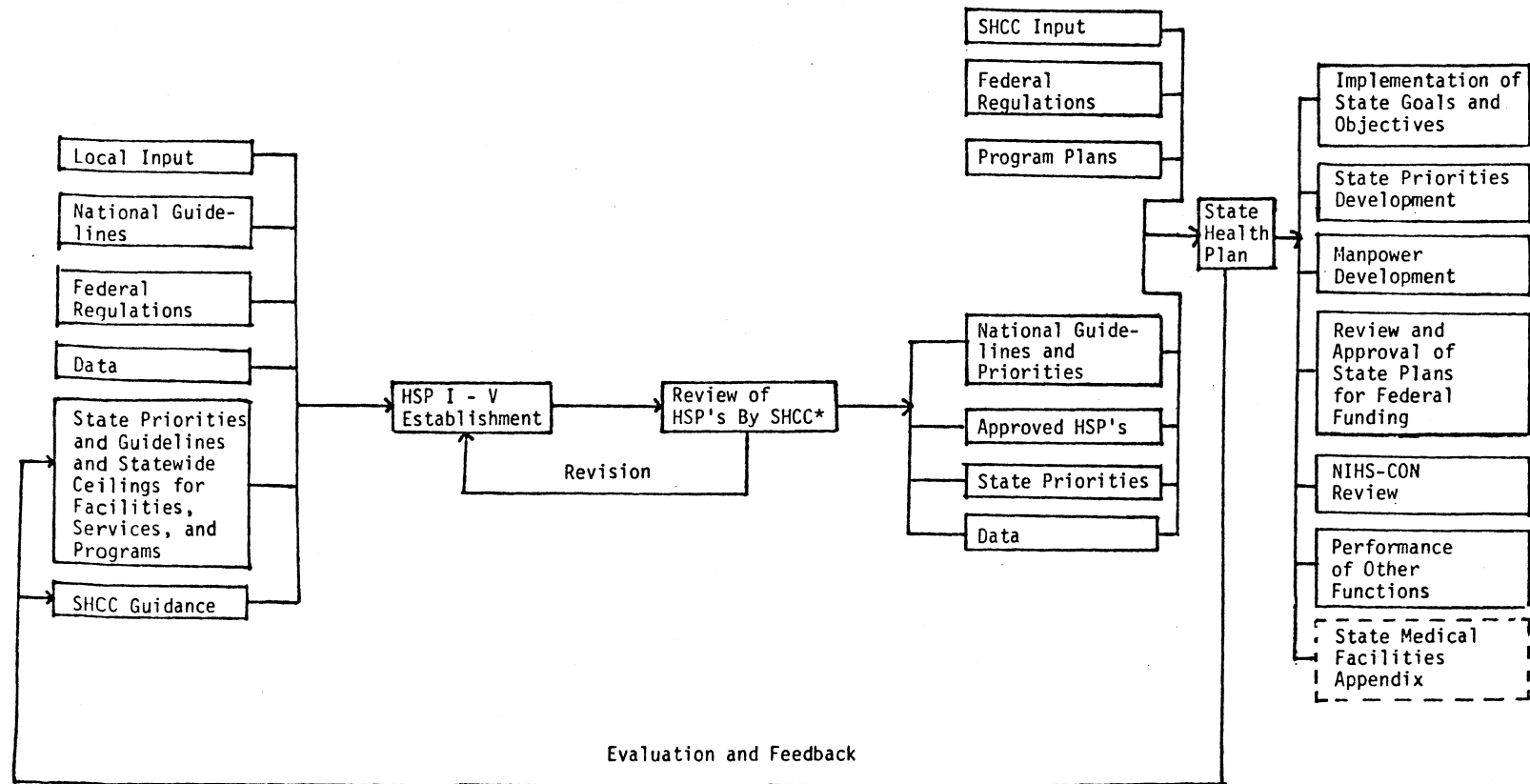
It should be emphasized that a totally planned economy is not being advocated. The late Senator Hubert H. Humphrey, a strong proponent of planning, said he did not want a planned society, rather he wished to see a society in which there was planning for the future.⁴ A society should look beyond the current year in an attempt to see what the policy in food, transportation, energy, and health ought to be.

Any concept, such as planning, that appears to interfere with the "free market system" has historically met with strong resistance in this country. The basic premise of planning is simply to assist the market in finding the best route to an equilibrium of supply and demand, and to do so with a minimum of formal assistance. Congress has recognized planning as a necessary tool when the market fails to guide itself. Planning is seen as being essentially more efficient for utilization of scarce resources than non-planning.

Health Planning as a Solution

This plan and the current planning effort nationwide is a result of the National Health Planning and Resource Development Act of 1974 (P.L. 93-641) as

CAPSULIZED SUMMARY OF HEALTH PLANNING PROCESS IN MISSOURI



*The SHCC review of HSP's assures statewide coordination of HSP's, integration and aggregation of the HSP into the SHP and also assures review and analysis of national needs and their applicability to the health service areas. Requirements include addressing the policies of the previous SHP(s), state guidelines and priorities, SMFA requirements, and the National Guidelines for Health Planning.

amended (P.L. 96-79). Congress, in passing this law, declared that the goals of the program will be to:

1. improve the health of the residents;
2. improve the accessibility, acceptability, continuity, and quality of health care;
3. restrain increases in cost; and
4. prevent unnecessary duplication of services.

The product of planning and the process by which the health industry's development and performance is articulated, is a written plan. Under P.L. 93-641, the various plans must address several key issues. These issues are as follows:

1. need versus demand;
2. distribution of services in relation to demand;
3. distribution of supply in relation to population;
4. resources available and/or necessary;
5. cost of these services; and
6. selection of priorities.

In general, the plans that are policy and goal-oriented (i.e., the State Health Plan and health systems plans) act as management tools, as a set of guidelines for change, and as a mechanism for identifying need. Each should seek to answer the following questions.

1. How does the area or State want health services delivered?
2. How are the services currently being delivered to the area or State?
3. What actions are needed to help the community identify and achieve its desired health status and system at some future date?
4. How can we achieve our goals within the existing system without destroying individual rights or freedom of choice for people or jeopardizing the traditional free nature of our society?

The more specific plans (i.e., the annual implementation plans and Medical Facilities Appendix) act as implementing mechanisms, that is, they act as guidelines facilitating action toward, and achievement of, the goals of the State Health Plan and the health systems plans. They should seek to answer the following questions.

1. How do we best distribute our scarce resources over the immediate future?

2. What gaps in priority areas exist which can be filled?
3. How can groups be motivated to offer needed services and information?

In addition, the Medical Facilities Appendix (MFA) has some qualities similar to the policy plans (e.g., State Health Plan) in that, need, generally established in the State Health Plan, is specifically identified in the MFA.

Purpose and Use

The purpose of this document is to provide direction and scope to future developments in the determinants of health and to serve as a basis for decisions made under project review. There are six major functions specifically, they are to provide:

1. a vehicle for development of health policy for the State;
2. a basis for use in planning by governmental and non-governmental organizations at the State level;
3. provide the basis for allocation of scarce health resources at the State level;
4. state priority areas for changes in the health care system statewide;
5. statewide goals for health and health related activities and the actions and resource required to achieve these goals; and
6. areas of concern for legislative or executive action.

By design, the first few editions will devote much space to the delivery of health and medical care. In each succeeding year, however, more and more emphasis should be placed on the determinants of life style, environment, and heredity.

The strategies outlined in this document offer policies, models, and direction with the sole purpose being a more efficient and effective system. The issues are, by and large, statewide in nature, which is as it should be. This is a State health plan. Very often, the specific findings of need and/or implementation of a policy is left to a local planning agency, to a local provider of care, or to a local voluntary health agency.

It is the Missouri Health Coordinating Council's intent to offer suggestions and to bring forth alternatives it believes feasible and reasonable. It wishes to present options, while the decisions (or at least major commitments) remain at the local level. It is hoped that the plan will be used in the program and policy development phase for projects in identified problem areas and will provide a basis from which decisions regarding resource allocation can be made.

PROCESS FOR EVALUATION OF THE PLAN

All plans must include a mechanism to evaluate the progress being made towards achievement of the document's goals. Also, the methods and strategies outlined in the plan to attain these goals must be periodically accessed if corrections in direction are to be made. Otherwise, chances for success are minimal.

In essence, the State Health Plan should not be considered a final document, but a dynamic and active one. The present conceptual notion of planning incorporates three previously separated activities: planning, implementation, and evaluation. These activities can be considered cyclical in nature with the evaluation phase leading directly into the initiation of a new planning cycle. Thus, evaluation acts as a feedback mechanism whereby newly gained experience can be used to generate more rational planning and implementation process and outcomes.

In health planning, as in our dynamically changing world, this reevaluation should take place on a periodic basis. It is evident that no decision can be considered appropriate indefinitely. The present planning horizon for the Missouri State Health Plan is five years; however, we are proposing that the Plan be evaluated annually. An annual evaluation should help to maintain the overall viability of the Plan within the changing health system.

Evaluation of the Plan should take place from two vantage points: outcome and process. Evaluation of outcomes requires assessing the attainment of the Plan's health status and health system goals and objectives. Inherent in this evaluation will be an in-depth description of why the goals and objectives were or were not achieved. This evaluation will, very simply, determine: 1) if planning has improved the health status of Missourians; 2) if health care costs have been reduced; 3) if duplication has been eliminated; and 4) if health services have been made more available and accessible to the residents of Missouri. The criteria for determining whether these activities have been attained will be based on the quantified indicators contained in the State Health Plan. The trends of these indicators will be utilized as gross measures of the effectiveness of the planning strategies. Undoubtedly, it will be difficult to demonstrate conclusive change in many cases until effective evaluation techniques specific to each component of the Plan can be formalized. However, the gaps in conclusive evidence should not deter the evaluation of technically feasible and desirable ends.

The planning process evaluation is concerned with accessing the procedures and methods used in development of the State Health Plan. The basic purpose of this evaluation is to determine the validity of the planning outcomes. However, this evaluation can also be considered an assessment of planning philosophy, creativity, and innovation.

The overall process for evaluating the Missouri state health planning efforts should be divided into two distinct parts. The first will be the planning outcome evaluation which should be a regularly scheduled major activity of the MHCC. The actual evaluation and recommendations would go to the MHCC from

a task force composed of: 1) MHCC members; 2) SHPDA staff; and 3) independent consumers and providers familiar with the Missouri planning process. The exact timing of this evaluation should be determined by the MHCC within the logical bounds of the total process. The second part of the overall evaluation will be the technical evaluation of the planning process. This should be conducted on a cooperative basis between the SHPDA staff, the Department of Health and Human Services (DHHS), and the Executive Committee of the MHCC.

The results of the overall evaluation process should, of course, result in the improvement of the plan development and plan implementation phases of the planning process and to give the MHCC/SHPDA an objective basis for determining true accomplishment.

STATEWIDE NEEDS AND PRIORITIES

In order to develop strategies for specific issues in health care, areas for priority consideration must be identified and periodically updated. In previous planning activities at the State level, areas of emphasis were selected through subjective processes. While these issues were often important, no objective or defensible method was utilized in the selection process. That is, the issues were often not supported as the "most" critical.

The identification process utilized for the first State Health Plan attempted to objectively identify areas of concern which, if not the "most" important, were at least substantiated as being significant.

For the third edition of the Missouri State Health Plan, the previously established needs and priorities were reevaluated and updated in January, 1981. These needs and priorities are included in this portion of the Plan. The full report, Statewide Health Needs and Priorities with supporting data is available from the State Health Planning and Development Agency (SHPDA).

The development of statewide health priorities was based on the input from six sources:

1. National goals, guidelines, and priorities;
2. State Agency priorities and public comments concerning the State Health Plan;
3. issues of concern brought out by the health systems plans;
4. health status analysis;
5. analysis of demographic and socio-economic characteristics; and
6. major priorities established by statewide organizations relative to health.

It is evident that the type and design of the specific areas of input differ, therefore, it was important that the process for each input be carefully implemented. A common set of criteria bound the various processes together. Each point was examined to determine: 1) its relevance to Missouri; 2) how critical the problem is within Missouri; and 3) whether the State Health Plan as implemented by the Missouri Health Coordinating Council (MHCC), the State Health Planning and Development Agency (SHPDA), and the Health Systems Agencies (HSAs) is an appropriate vehicle for solving such a problem.

The National Health Planning and Resources Development Amendments of 1979, P.L. 96-79, also states that statewide needs and priorities will be utilized as a basis for the approval or disapproval of the State Health Plan by the Governor of the State and that the Statewide Needs and Priorities must be taken into account by the Health Systems Agencies (HSAs) in their respective planning process.

Based on the analysis in the Statewide Needs and Priorities, the following areas of major concern were identified. Although the entire list of fifty-one (51) priorities reflect major health issues in Missouri, the Missouri Health Coordinating Council (MHCC) has decided to place implementation emphasis on the first twenty (20).

1. ASSURE ADEQUATE SUPPLY AND DISTRIBUTION OF HEALTH AND MENTAL HEALTH CARE MANPOWER (I.E., PRIMARY CARE PHYSICIAN, DENTAL, ETC.)
2. REDUCE THE INCIDENCE OF MAJOR CARDIOVASCULAR DISEASE.
3. ASSURE THE MONITORING OF THE PRODUCTION, INVENTORY, AND DISTRIBUTION OF CONTROLLED SUBSTANCES.
4. DEVELOP AND IMPLEMENT A COMPREHENSIVE SCHOOL HEALTH EDUCATION PROGRAM.
5. REDUCE THE INCIDENCE OF COMMUNICABLE DISEASES.
6. REDUCE THE INCIDENCE OF PREVALENCE OF CIGARETTE SMOKING.
7. REDUCE THE INCIDENCE AND PREVALENCE OF CHILD ABUSE AND NEGLECT.
8. DEVELOP HEALTH PROMOTION AND PRIMARY PREVENTION PROGRAMS THAT ENCOURAGE POSITIVE LIFESTYLES.
9. IMPROVE EARLY DIAGNOSIS AND TREATMENT OF CANCER.
10. ASSURE THE AVAILABILITY OF A CORE OF HEALTH SERVICES IN RURAL MISSOURI.
11. MAINTAIN THE APPROPRIATE LEVELS OF AIR QUALITY STANDARDS.
12. REDUCE THE INCIDENCE OF INFANT MORTALITY IN UNDERSERVED AREAS. (I.E., ECONOMICALLY DEPRESSED AREAS)
13. IMPROVE THE NUTRITIONAL STATUS OF THE GENERAL POPULATION.
14. DETERMINE THE PREVALENCE AND INCIDENCE OF DISEASES RELATED TO AIR, WATER AND HAZARDOUS WASTE POLLUTION.
15. ASSURE AVAILABILITY OF FAMILY PLANNING SERVICES TO A MAJORITY OF PERSONS BETWEEN THE AGES OF 15 AND 44.
16. ESTABLISH APPROPRIATE LEVELS OF EMERGENCY MEDICAL SERVICES.
17. ASSURE ADEQUATE LEVELS OF IMMUNIZATION FOR PRESCHOOL CHILDREN.
18. COMPLY WITH APPROPRIATE LEVELS OF WATER QUALITY STANDARDS.
19. ASSURE ADEQUATE PLANNING AND COORDINATION BETWEEN THE PUBLIC AND PRIVATE HEALTH AND MENTAL HEALTH CARE SECTORS.

20. ASSURE AN AFFORDABLE HEALTH AND MENTAL HEALTH CARE SYSTEM THAT IS FINANCIALLY ACCESSIBLE TO MISSOURI.
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21. Reduce the incidence and prevalence of automobile accidents.
22. Provide comprehensive care to abusing families.
23. Reduce the incidence of rape and sexual assault.
24. Develop a comprehensive core of Mental Health Services.
25. Reduce the levels of stress due to environmental factors.
26. Protect public and environmental health from pollution and contamination due to hazardous wastes.
27. Assure adequate mechanism for flouridation programs.
28. Reduce the threat to public and environmental health due to toxic material.
29. Reduce the incidence of influenza and pneumonia.
30. Develop alternative community long-term care systems.
31. Reduce the incidence of kidney diseases.
32. Develop alternative manpower categories. (i.e., nurse practitioners, mid-wives, physician assistants)
33. Expansion of third party reimbursement for alternative and preventive health and mental health care. (i.e., Medicaid/Medicare, Blue Cross/Blue Shield)
34. Reduce the incidence of chronic pulmonary diseases.
35. Initiate and support legislation that encourages adequate health and mental health care.
36. Provide manpower training and continuing education at all levels of employment to assure adequate care.
37. Develop adult protective services.
38. Reduce the incidence of violent deaths. (i.e., suicide, homicide)
39. Promote citizen participation in the planning and evaluation of health and mental health services.
40. Assure adequate supply and distribution of health and mental health care resources. (non-manpower/non-financial)

41. Reduce the incidence of sickle cell anemia.
42. Develop public awareness and consumer information programs concerning health issues in Missouri.
43. Increase the standards of living for those at the below 125% of the poverty level.
44. Encourage appropriate utilization of health and mental health care resources and services.
45. Reduce the incidence of Mental Retardation.
46. Improve linkage between providers to assure a continuum of care. (i.e., refunds, qualified provider agreements, networking, etc.)
47. Remove social and physical barriers in order to increase accessibility for the disabled and elderly.
48. Establish appropriate levels of exposure to ionizing radiation.
49. Reduce the incidence of accidental deaths. (other than motor vehicle)
50. Reduce the number of cesarean births.
51. Improve rehabilitation services for ex-offenders.

National Priorities and Guidelines for Health Planning

Priorities

- (A) 1. The provision of primary care services for medically underserved populations, especially those which are located in rural or economically depressed areas.

The Missouri Health Coordinating Council (MHCC) has selected the provision of primary care services in rural Missouri as its tenth overall priority. In addition the MHCC has listed as a priority the assurance of an affordable health and mental health care system that is financially accessible to all Missourians. Further discussion may be found in the Outpatient and Mental Health subsections of the Diagnostic and Treatment Section.

2. The development of multi-institutional systems for coordination or consolidation of institutional health services (including obstetric, pediatric, emergency medical, intensive and coronary care, and radiation therapy services).

The MHCC has cited the coordination or consolidation of institutional health services in its list of statewide needs and priorities (nos. 19 and 46) and has considered it in the development of the Medical Facilities Appendix (MFA).

3. The development of medical group practices (especially those whose services are appropriately coordinated or integrated with institutional health services), health maintenance organizations, and other organized systems for the provision of health care.

The analysis of primary care services in the Diagnostic and Treatment Section of the Plan addresses the need for developing alternatives. In order to assure the availability of these alternatives and preventive health care services the MHCC has stated as a priority the expansion of third party reimbursement to cover these services. Further discussion can be found in the MFA.

4. The training and increased utilization of physican assistants, especially nurse clinicians.

The MHCC has listed this concern thirty-second in its list of needs and priorities. A discussion of this concern may be found in the Systems Development Section and in other sections of the Plan.

5. The development of multi-institutional arrangements for the sharing of support services necessary to all health service institutions.

This priority was considered in the development of the MFA and in its recommendations.

6. The promotion of activities to achieve needed improvements in the quality of health services, including needs identified by review activities of Professional Standards Review Organizations under Part B of Title XI of the Social Security Act.

Quality of care is addressed in a number of sections of the State Health Plan and in the MFA, as well as in the development of Criteria and Standards of health services. Furthermore, the MHCC encourages citizen participation in the planning and evaluation of health and mental health services.

7. The development of health service institutions of the capacity to provide various levels of care (including intensive care, acute general care, and extended care) on a geographically integrated basis.

The issue of continuity of care is discussed both in various subsections of the Diagnostic and Treatment Section of the Plan and the MFA. This concern has also been addressed in the development of the Criteria and Standards for health services as well as in the document entitled Statewide Health Needs and Priorities.

8. The promotion of activities for the prevention of disease, including studies of nutritional and environmental factors affecting health and the provision of preventive health.

The MHCC has selected health promotion and prevention as one of its major concerns. Two (nos. 4 and 8) of the top ten priorities listed in the Statewide Health Needs and Priorities address the issue of promotion and prevention. There are also at least an additional ten priorities in the report that are concerned with nutritional, environmental and preventive health. Furthermore the Health Promotion and Education section of the Plan has been expanded to include patient education and occupational health.

9. The adoption of uniform cost accounting, simplified reimbursement, and utilization reporting systems, and improved management procedures for health service institutions and the development and use of cost saving technology.

The Medical Facilities Appendix discusses Medicaid/Medicare reimbursement. Policies regarding third party payers and reimbursement of health care are also found in the Systems Development section of the Plan.

10. The development of effective methods of educating the general public concerning proper personal (including prevention) health care and methods for effective use of available health services.

The MHCC has stated that the development of public awareness and consumer information programs as a priority. In addition the State Health Plan discusses at length the need for educational activities in order to improve the health status of Missourians and to assure the appropriate utilization of health care services.

11. The promotion of an effective energy conservation and fuel efficiency program for health service institutions to reduce the rate of growth of demand for energy.

The MHCC has charged the State Health Planning and Development Agency with addressing these areas of concern and presenting them to the MHCC for their consideration.

12. The identification and discontinuance of duplicative or unneeded services and facilities.

This priority has been discussed in the MFA along with the development of recommendations for addressing this concern. The MHCC has clearly supported this priority if the services were unnecessary and if discontinuance would not limit the accessibility of these services for underserved populations.

13. The adoption of policies which will (A) contain the rapidly rising costs of health care delivery, (B) insure more appropriate use of health care services, and (C) promote greater efficiency in the health care delivery system.

The MHCC has listed as two of its priorities the assurance of an affordable health care system, and appropriate utilization of services. Further discussion on these issues of controlling cost and enhancing the efficiency of the health care system are discussed in the MFA.

14. The elimination of inappropriate placement in institutions of persons with mental health problems and the improvement of the quality of care provided those with mental health problems for whom institutional care is appropriate.

The MHCC has made mental health services one of its top priorities. Appropriate utilization as well as the development of a comprehensive mental health system in order to assure appropriate treatment setting placement have been specifically stated as priorities for the MHCC. Furthermore the SHPDA and DMH have entered into an Memorandum of Agreement regarding the planning of Mental Health Services.

15. Assurance of access to community mental health centers and other mental health care providers for needed mental health services to emphasize the provision of outpatient as a preferable alternative to inpatient mental health services.

The MHCC has cited as its number one priority the assurance of an adequate supply and distribution of health and mental health care manpower. In addition the MHCC has listed as a priority the development of a comprehensive core of Mental Health Services. For further discussion refer to the Mental Health Services section of the State Health Plan.

16. The promotion of those health services which are provided in a manner cognizant of the emotional and psychological components of the prevention and treatment of illness and maintenance of health.

The MHCC has emphasised this concern in various sections of the State Health Plan as well as listing the need to develop health promotion and primary prevention programs that encourage positive lifestyles.

17. The strengthening of competitive forces in the health services industry wherever competition and consumer choice can constructively serve, in accordance with subsection [(B)], to advance the purposes of quality assurance, cost effectiveness, and access.
- (B) 1. The Congress finds that the effect of competition on decisions of providers respecting the supply of health services and facilities is diminished. The primary source of the lessening of such effect is the prevailing methods of paying for health services by public and private health insurers, particularly for inpatient health services and other institutional health services. As a result, there is duplication and excess supply of certain health services and facilities, particularly in the case of inpatient services.
2. For health services, such as inpatient health services and other institutional health services, for which competition does not or will not appropriately allocate supply consistent with health systems plans and State health plans, health systems agencies and State health planning and development agencies should in the exercise of their functions under this title take quality assurance, cost effectiveness, and access) to allocate the supply of such services.
 3. For the health services for which competition appropriately allocates supply consistent with health systems plans and State health plans, health systems agencies and State health planning and development agencies should in the performance of their functions under this title give priority (where appropriate to advance the purposes of quality assurance, cost effectiveness, and access) to actions which would strengthen the effect of competition on the supply of such services.

The MHCC overwhelmingly supports this priority and is attempting to determine how to deal with the implementation of this effort. See the Systems Development section for additional information.

Goals of the National Guidelines for Health Planning

- GOAL #1: Health status should be improved in all parts of the country and among all population groups.
- GOAL #2: Health promotion should be extended through both individual and community actions.

GOAL #3: Every person should have access to emergency and primary health care services and to appropriate specialized, long-term, and rehabilitation services.

GOAL #4: Health care financing systems should facilitate accessibility to appropriate care for all population groups and encourage efficient methods of providing such services and managing health care insititutions.

These goals are clearly consistent with present MHCC policy. They have been adopted as priorities of the MHCC and as specific goals and objectives in the State Health Plan and the Medical Facilities Appendix.

Guidelines

The following discussion indicates how the MHCC/SHPDA had addressed the National Guidelines for Health Planning. The analysis of the Guidelines is in the Medical Facilities Appendix (MFA) of the State Health Plan. The responses that follow were taken directly from the Priority Implementation Strategies section of the MFA.

Guideline 1

There should be less than four non-Federal, short-stay hospital beds for each 1,000 persons in a health service area except under extraordinary circumstances. For purposes of this section, short-stay hospital beds include all non-Federal short-stay hospital beds (including general medical/surgical, children's obstetric, psychiatric, and other short-stay specialized beds).

By 1985, the number of licensed acute care beds per 1,000 population should be reduced from 5.60 to 4.11.

Guideline 2

There should be an average annual occupancy rate for medically necessary hospital care of at least 80 percent for all non-Federal, short-stay hospital beds considered together in a health service area, except under extraordinary circumstances.

By 1985, the statewide licensed average annual occupancy rate of 80 percent for hospital in aggregate bed size as established in the MFA.

Guideline 3

1. Obstetrical services should be planned on a regional basis with linkages among all obstetrical services and with neonatal services.

By 1981, the HSAs should address the regionalization of obstetrical services.

2. Hospitals providing care for complicated obstetrical problems (Levels II and III) should have at least 1,500 births annually.

By 1983, all Level II and Level III should ensure that they are operating at least at a desired minimum of 1,500 births annually.

3. There should be an average annual occupancy rate of at least 75 percent in each unit with more than 1,500 births per year.

By 1983, all Level II and Level III obstetrical facilities should ensure that they are operating at a 75 percent average annual occupancy rate.

Guideline 4

1. Neonatal services should be planned on a regional basis with linkages with obstetrical services.

By 1983, Missouri HSAs should address the regionalization of neonatal services linked with obstetrical services.

2. The total number of neonatal intensive and intermediate care beds should not exceed 4 per 1,000 live births per year in a defined neonatal service area. An adjustment upward may be justified when the rate of high-risk pregnancies is unusually high, based on analyses by the HSA.

By 1983, the number of neonatal intensive and intermediate care beds should not exceed 4 per 1,000 live births in a defined neonatal area.

3. A single neonatal special care unit (Level II or III) should contain a minimum of 15 beds. An adjustment downward may be justified for a Level II unit when travel time to an alternate unit is a serious hardship due to geographic remoteness, based on analyses by the HSA.

By 1983, all Level II and Level III neonatal special care units should contain a minimum of 15 beds.

Guideline 5

There should be a minimum of 20 beds in a pediatric unit in urbanized areas. An adjustment downward may be justified when travel time to an alternate unit exceeds 30 minutes for 10 percent or more of the population, based on analyses by the HSA.

By 1983, all pediatric units in urban hospitals should consolidate or share services in order to maintain a desired minimum of 30 beds per unit.

Guideline 6

Pediatric units should maintain average annual occupancy rates related to the number of pediatric beds (exclusive of neonatal special care units) in the facility. For a facility with 20 to 39 pediatric beds, the average annual occupancy rate should be at least 65 percent; for a facility with 40 to 79 pediatric beds, the rate should be at least 70 percent; for facilities with 80 or more pediatric beds, the rate should be at least 75 percent.

By 1983, all hospital based pediatric units should ensure that they are operating at a 65 to 75 percent annual occupancy rate depending on bed size as follows: 20 to 39 beds/65 percent; 40 to 79 beds/70 percent; 80 plus beds/75 percent.

Guideline 7

1. There should be a minimum of 200 open-heart procedures performed annually, within three years after initiation.

By 1983, there should be a desired minimum of 200 open-heart procedures performed annually within any institution performing open-heart surgery.

2. There should be a minimum of 100 pediatric heart operations annually, within three years after initiation, in any institution in which pediatric open-heart surgery is performed, of which at least 75 should be open-heart surgery.

By 1982, there should be a desired minimum of 100 pediatric heart procedures performed annually within any institution in which pediatric open-heart surgery is performed.

3. There should be no additional open-heart units initiated unless each existing unit in the health service area(s) is operating and is expected to continue to operate at a minimum of 350 open-heart surgery cases per year in adult services or 130 pediatric open-heart cases in pediatric services.

By 1983, additional open-heart units should not be established unless each existing unit is operating at 350 adult open-heart cases or 130 pediatric open-heart cases per year.

Guideline 8

1. There should be a minimum of 300 cardiac catheterizations, of which at least 200 should be intracardiac or coronary artery catheterizations, performed annually in any adult cardiac catheterization unit within three years after initiation.

By 1983, there should be a desired minimum of 300 cardiac catheterizations performed annually in any adult catheterization unit.

2. There should be a minimum of 150 pediatric cardiac catheterizations performed annually in any unit performing pediatric cardiac catheterizations within three years after initiation.

By 1983, there should be a desired minimum of 150 pediatric cardiac catheterization performed annually in any pediatric catheterization unit.

3. There should be no new cardiac catheterization unit opened in any facility not performing open-heart surgery.

No official MHCC policy has been adopted, for further discussion please refer to the MFA.

4. There should be no additional adult cardiac catheterization unit opened unless the number of studies per year in each existing unit in the health service area(s) is greater than 500 and no additional pediatric unit opened unless the number of studies per year in each existing unit is greater than 250.

By 1983, additional adult catheterization units should not be opened unless the number of studies per year exceeds 500 in a health services area. Any proposed facility meeting this requirement must also perform open-heart surgery meeting the open heart surgery goal.

Guideline 9

1. A megavoltage radiation therapy unit should serve a population of at least 150,000 persons and treat at least 300 cancer cases annually, within three years after initiation.

By 1983, all megavoltage radiation therapy units should serve a population of 150,000 persons and treat at least 300 cancer cases annually.

2. There should be no additional megavoltage units opened unless each existing megavoltage unit in the health service area(s) is performing at least 6,000 treatments per year.

By 1983, additional megavoltage units should not be opened unless each existing megavoltage unit in a health service area is performing at least 6,000 treatments per year.

3. Adjustments downward may be justified when travel time to an alternative unit is a serious hardship due to geographic remoteness, based on analyses by the HSA.

No official MHCC policy has been adopted.

Guideline 10

1. A Computed Tomographic Scanner (head and body) should operate at a minimum of 2,500 medically necessary patient procedures per year, for the second year of its operation and thereafter.

By 1983, both head and body Computed Tomographic Scanners should operate at a desired minimum load or scan time and body to head ratio as established in the MFA.

2. There should be no additional scanners approved unless each existing scanner in the health service area is performing at a rate greater than 2,500 medically necessary patient procedures per year.

By 1983, additional Computed Tomographic Scanners should not be approved unless each existing scanner in a health service area is performing at a rate greater than the minimum based on the machine scan time and head to body ratio as estimated in the MFA.

3. There should be no additional scanners approved unless the operators of the proposed equipment will set in place data collection and utilization review systems.

By 1983, no additional scanners unless the operators of the proposed equipment will set in place data collection and utilization review systems.

Guideline 11

The Health Systems Plan established by HSA's should be consistent with standards and procedures contained in regulations governing conditions for coverage of suppliers of end-stage renal disease services, 20 CFR Part 405, Subpart U.

By 1983, all Health System Plan should be consistent with the standards and procedures contained in the Department of Health and Human Services regulations governing supplies of End-Stage Renal Disease programs.



SUMMARY OF GOALS AND OBJECTIVES OF THE
STATE HEALTH PLAN AND ITS APPENDICES



HEALTH STATUS

GOAL: BY 1985, MORTALITY DUE TO HEART DISEASE SHOULD BE REDUCED BY 10 PERCENT TO 332.1 DEATHS PER 100,000 POPULATION.

GOAL: BY 1985, CEREBROVASCULAR MORTALITY SHOULD BE REDUCED BY 20 PERCENT TO 74.1 DEATHS PER 100,000 POPULATION.

GOAL: BY 1985, THE RATE OF CANCER MORALITY SHOULD NOT INCREASE.

GOAL: BY 1985, THE LIFE EXPECTANCY OF MISSOURI RESIDENTS SHOULD EQUAL OR EXCEED THE 1985 U.S. AVERAGE LIFE EXPECTANCY.

GOAL: BY 1985, THE STATEWIDE MORBIDITY RATE FOR TUBERCULOSIS SHOULD NOT EXCEED EIGHT CASES PER 100,000 POPULATION.

GOAL: BY 1985, MORTALITY DUE TO ACCIDENTS SHOULD BE REDUCED BY 16 PERCENT TO 39.8 PER 100,000 POPULATION.

GOAL: BY 1985, THE COMPOSITE STATEWIDE SUICIDE RATE SHOULD BE LESS THAN 10.6 DEATHS PER 100,000 POPULATION.

GOAL: BY 1982, COMPOSITE STATEWIDE HOMICIDE RATES SHOULD NOT EXCEED THE 1978 STATEWIDE RATE OF 10.7 AND NO HEALTH SERVICE AREA SHOULD EXCEED 14.0 PER 100,000 POPULATION.

GOAL: THE INCIDENCE OF NEGATIVE HEALTH RELATED CHARACTERISTICS SHOULD NOT BE ALLOWED TO INCREASE.

GOAL: BY 1985, THE ALCOHOLISM RATE IN MISSOURI SHOULD BE REDUCED TO FIVE PERCENT LESS THAN THE DEPARTMENT OF MENTAL HEALTH PROJECTION FOR THAT YEAR.

GOAL: BY 1985, THE MISSOURI INFANT MORTALITY RATE SHOULD BE REDUCED FROM THE PRESENT RATE OF 13.7 TO 11.5 PER 1,000 LIVE BIRTHS WITH NO POPULATION GROUP OR HEALTH SERVICE AREA EXCEEDING 17 PER 1,000 LIVE BIRTHS.

GOAL: BY 1985, THE MISSOURI NEONATAL DEATH RATE SHOULD BE REDUCED FROM THE 1979 RATE OF 9.5 TO 7.9 PER 1,000 LIVE BIRTHS WITH NO HEALTH SERVICE AREA EXCEEDING 9 DEATHS PER 1,000 LIVE BIRTHS.

GOAL: BY MEANS OF INCREASED IMMUNIZATION EFFORTS, TO REDUCE THE NUMBER OF PEOPLE SUSCEPTIBLE TO THESE DISEASES TO THE ABSOLUTE MINIMUM.

GOAL: TO REDUCE THE INCIDENCE AND PREVALENCE OF COMMUNICABLE DISEASES IN MISSOURI TO THE LOWEST POSSIBLE LEVEL.

GOAL: INCREASE THE ACCURACY AND QUANTITY OF REPORTS OF CHILD ABUSE AND NEGLECT.

GOAL: BY 1985, THE NUMBER OF ABUSED AND NEGLECTED CHILDREN SHOULD BE REDUCED TO A MINIMUM.

GOAL: BY 1985, MORTALITY RATES DUE TO HEART DISEASE, CEREBROVASCULAR DISEASE SHOULD BE REDUCED BY FIVE PERCENT AND THE MORTALITY RATES DUE TO CANCER SHOULD NOT INCREASE BEYOND THEIR PRESENT LEVEL.

GOAL: BY 1985, THE STATEWIDE INCIDENCE RATE FOR GONORRHEA SHOULD NOT EXCEED THE PRESENT RATE OF 472.3 CASES PER 100,000 POPULATION.

GOAL: BY 1985, THE STATEWIDE INCIDENCE RATE FOR SYPHILLIS SHOULD NOT EXCEED THE PRESENT U.S. RATE OF 29.5.

GOAL: BY 1985, THE MORTALITY RATE DUE TO ACCIDENTAL DEATH FOR MALES 15-24 SHOULD BE REDUCED BY TEN PERCENT.

GOAL: BY 1985, THE MISSOURI ACCIDENT DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY FIVE PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

GOAL: BY 1985, THE MISSOURI SUICIDE DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY FIVE PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

GOAL: BY 1985, THE HOMICIDE DEATH RATE SHOULD BE REDUCED OVER ALL AGE GROUPS WITH PARTICULAR EMPHASIS ON REDUCTION OF THE DEATH RATE AMONG 15-34 YEARS.

GOAL: BY 1985, THE DEATH RATE DUE TO CIRRHOSIS OF THE LIVER SHOULD BE REDUCED BY A MINIMUM OF FIVE PERCENT WITHIN EACH AGE GROUP IN MIDDLE LIFE.

GOAL: BY 1985, AGE SPECIFIC DEATH RATES FOR THOSE PERSONS 65 AND OVER SHOULD NOT EXCEED THE U.S. RATE FOR THE SAME GROUP.

GOAL: BY 1985, AGE SPECIFIC ACCIDENTAL DEATH RATES AMONG THOSE PERSONS 65 AND OVER SHOULD NOT EXCEED COMPARABLE U.S. RATES.

GOAL: BY 1984, SUICIDE RATES AMONG MALES AGED 55-74 SHOULD BE REDUCED BY AT LEAST FIVE PERCENT.

GOAL: BY 1984, MORTALITY DUE TO CIRRHOSIS OF THE LIVER AMONG THOSE AGED 65 AND OVER SHOULD NOT EXCEED THE PRESENT RATES BY AGE COHORTS (SEE TABLE II-HS-28).



HEALTH PROMOTION

Lifestyle Development

GOAL: TO ENSURE THAT THE CORE PUBLIC HEALTH, ENVIRONMENTAL, AND HEALTH EDUCATION PROGRAMS AND SERVICES ARE AVAILABLE AND ACCESSIBLE TO RESIDENTS OF EVERY COUNTY IN MISSOURI.

OBJECTIVE 1: By 1981, counties should 1) examine their need to increase the staff of their units so that needed services might be initiated or expanded, or 2) examine their area for sources to meet needs, whichever is more appropriate.

OBJECTIVE 2: By 1982, there should be public health units in all Missouri counties.

OBJECTIVE 3: By 1983, the number of public health nurses in local units around the State should be increased by ten percent.

OBJECTIVE 4: By 1983, the number of environmental sanitarians in local units around the State should be increased by ten percent.

OBJECTIVE 5: By 1983, public health units in counties with over 25,000 population should provide all 19 services (either in-house or by referral) listed in Issue Analysis.

OBJECTIVE 6: By 1982, there should be one health educator and/or risk reduction or prevention program for each Regional Planning Commission area in Missouri.

GOAL: TO INCREASE COMMUNICATION AND COORDINATION AMONG PUBLIC AND VOLUNTARY HEALTH RELATED ASSOCIATIONS.

OBJECTIVE 1: Maintain and support the Statewide Comprehensive Health Education Coalition.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE PROVISION OF HEALTH PROMOTION SERVICES BY ALL EMPLOYERS AND UNIONS IN MISSOURI.

OBJECTIVE 1: By 1983, ten percent of businesses and industries in Missouri should have developed health promotion programs for their employees at all levels.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY MOTIVATING POSITIVE HEALTH BEHAVIOR THROUGH THE MEDIA.

OBJECTIVE 1: By 1981, Missouri advertising industries and television should establish a council to provide leadership in developing accurate and socially responsible health education programming.

OBJECTIVE 2: By 1981, the Federal Communications Commission in cooperation with DHHS should develop standards for television programming and advertising on health.

The leadership of the television and advertising industries with the help of appropriate representatives of the public and health care sectors should also develop television as a major national resource for community health education.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE IMPLEMENTATION OF A COMPREHENSIVE SCHOOL HEALTH EDUCATION PROGRAM IN EVERY SCHOOL DISTRICT IN MISSOURI.

OBJECTIVE 1: By 1981, the State Department of Elementary and Secondary Education should develop a strategy for implementing Comprehensive School Health Education.

OBJECTIVE 2: By 1983, the State Department of Elementary and Secondary Education with the assistance of the Division of Alcoholism and Drug Abuse and the Division of Health should establish as an ongoing program a resource center to support, assist, and evaluate local school programs. Minimally, the resource center should:

1. state that there should be an integrated comprehensive school health education program taught in grades kindergarten through twelve in every school district, and act as a resource for developing model comprehensive school health education programs;
2. develop criteria and standards for effective Comprehensive School Health Education;
3. provide for each school district to submit a written planned curriculum to them for review and approval;
4. provide information on and access to a central clearinghouse for educational literature, films, and other materials (housed in the Division of Health);
5. establish implementation strategies;
6. establish a review mechanism;
7. provide sufficient funding or assistance in locating funding sources; and

8. provide for monitoring and an adequate mechanism for evaluating each program reviewed.

OBJECTIVE 3: By 1983, each school district should have written a planned health education curriculum and implementation strategy which is in compliance with the State Department of Elementary and Secondary Education guidelines.

OBJECTIVE 4: By 1982, the Missouri Division of Health with the assistance of the Department of Mental Health (Division of Alcoholism and Drug Abuse) should establish a central reference and clearinghouse for school health literature, films, and other educational material.

OBJECTIVE 5: By 1981, the Department of Elementary and Secondary Education and the Department of Higher Education should develop in-service training programs for teachers in the area of health education.

OBJECTIVE 6: By 1983, the Missouri Division of Health, Department of Elementary and Secondary Education, and the Department of Mental Health in cooperation with schools should begin to offer school health education programs to reach other members of the community.

Risk Avoidance

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY PROVIDING FINANCIAL INCENTIVES FOR HEALTH PROMOTING BEHAVIOR.

OBJECTIVE 1: By 1983, third party payors should develop incentive premium schedules for individuals who practice good health habits, and should develop reimbursement coverage for health promotion and health maintenance procedures performed on an outpatient basis.

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement should include patient and other health education, screening, well-person maintenance, and early diagnosis and outpatient treatment.

OBJECTIVE 3: By 1982, tax incentives should be devoted for health promoting behavior.



ENVIRONMENTAL HEALTH

Environmental Health Management

GOAL: MAINTAIN A PUBLIC WATER SUPPLY PROGRAM WHICH ENSURES THAT ALL OF THE POPULATION CONSUMING WATER FROM A PUBLIC WATER SYSTEM RECEIVES WATER WHICH MEETS ALL HEALTH RELATED STANDARDS.

GOAL: DEVELOP AND SET PRIORITIES FOR COMPLIANCE PLANS FOR ALL STREAMS IN MISSOURI WHERE WATER QUALITY IS NOT IN COMPLIANCE WITH ITS INTENDED USE BECAUSE OF POINT DISCHARGES (MUNICIPAL AND INDUSTRIAL).

GOAL: PREVENT DETERIORATION OF GROUND WATER QUALITY.

GOAL: IDENTIFY AND DEVELOP A POLICY TO PROTECT EXISTING HIGH QUALITY STREAMS BY 1983.

GOAL: INCREASE THE PERCENTAGE OF MUNICIPAL FACILITIES IN OUTSTATE MISSOURI UTILIZING EFFLUENT IRRIGATION OF FARMLAND.

GOAL: INCREASE THE PERCENTAGE OF MUNICIPAL FACILITIES IN OUTSTATE MISSOURI WHICH APPLY THEIR WASTE WATER SLUDGE AS A SOIL CONDITIONER OR FERTILIZER ON FARMLAND.

GOAL: ENSURE THAT ALL COMMUNITIES REQUIRING FLUORIDATED WATER SUPPLIES HAVE THEM BY 1986.

GOAL: ENSURE THAT ALL PRIVATE DRINKING WATER SUPPLIES ARE ADEQUATELY MONITORED BY 1984.

GOAL: PROMOTE A RESOURCE RECOVERY PROGRAM OF MISSOURI MUNICIPAL WASTE.

GOAL: INSURE COMPLIANCE WITH MISSOURI'S SOLID WASTE MANAGEMENT LAW AND REGULATIONS FOR MUNICIPAL SOLID WASTE.

GOAL: PERFORM REGULAR CLEAN UP OF HAZARDOUS WASTE DISPOSAL SITES.

GOAL: CONTINUE IMPLEMENTATION OF MISSOURI'S HAZARDOUS WASTE MANAGEMENT LAW AND REGULATIONS, AND ACCOMPLISH THE NECESSARY TASKS TO OBTAIN AUTHORIZATION FROM EPA SO THAT THE STATE ADMINISTERS THE PROGRAM RATHER THAN THE FEDERAL GOVERNMENT.

GOAL: ASSURE PROPER PROCESSING, DISPOSAL, AND RECYCLING OF SOLID AND HAZARDOUS WASTE GENERATED IN THE STATE. ASSIST PRIVATE ENTERPRISE AND LOCAL GOVERNMENT SO THAT PROCESSING, DISPOSAL, AND RECYCLING FACILITIES ARE REASONABLY AVAILABLE FOR ALL SOLID AND HAZARDOUS WASTE GENERATED IN MISSOURI.

GOAL: PROMOTE THE USE OR REUSE OF BY-PRODUCTS FROM ENVIRONMENTAL CONTROL FACILITIES.

GOAL: ENCOURAGE CITIES AND COUNTIES TO EXERT THEIR EXISTING LEGAL AUTHORITY REGARDING SOLID WASTE MANAGEMENT AND DEVELOPMENT OF SOLID WASTE DISPOSAL AND COLLECTION SYSTEMS TO INCLUDE ADOPTION OF SOLID WASTE ORDINANCES AND ENFORCEMENT ACTIVITIES IN COORDINATION WITH THE DEPARTMENT OF NATURAL RESOURCES.

GOAL: BY FY 85, CONTINUE WORK TOWARDS COMPLIANCE WITH FEDERALLY ESTABLISHED AMBIENT AIR QUALITY STANDARDS IN ACCORDANCE WITH THE NEW REGULATIONS SET IN THE FINAL 1982 CLEAN AIR ACT AMENDMENTS. BY FY 88 ATTAIN AND MAINTAIN NATIONAL AMBIENT AIR QUALITY STANDARDS THROUGHOUT THE STATE IN ACCORDANCE WITH SCHEDULES PREVIOUSLY DEVELOPED IN THE DEQ STATE IMPLEMENTATION PLAN (SIP).

GOAL: ESTABLISH AN EDUCATION PROGRAM TO INFORM THE PUBLIC ON WHAT MEASURES SHOULD BE TAKEN TO AMELIORATE THE EFFECTS OF NON-CONTROLLABLE AIR POLLUTANTS.

GOAL: ALL MEDICAL USES OF RADIATION SHOULD BE LIMITED TO THE MINIMUM EXPOSURE LEVELS CONSISTENT WITH REQUIREMENTS OF THE PARTICULAR PROCEDURE AS ESTABLISHED BY THE AMERICAN COLLEGE OF RADIOLOGY AND BY THE NRC.

OBJECTIVE: The Bureau of Radiological Health should increase its inspection frequency to ensure that all radiological equipment meets minimum standards and is used safely.

GOAL: RISKS TO CITIZENS FROM INTER- AND INTRA-STATE SHIPMENTS OF RADIOACTIVE MATERIALS SHOULD BE MINIMIZED.

GOAL: REGULATIONS SHOULD BE ENACTED TO ENSURE THAT NON-IONIZING RADIATION LEVELS IN BOTH THE OUTDOOR AND INDOOR ENVIRONMENT ARE KEPT AT SAFE LEVELS.

GOAL: BY 1983, SUPPORT ENACTMENT OF, AND ALLOCATE RESPONSIBILITIES OF A COMPREHENSIVE RADIATION PROTECTION ACT CONCERNING BURIAL OF RADIOACTIVE WASTE, INSPECTION OF RADIATION MACHINES, MONITORING OF THE ENVIRONMENT AND EMERGENCY RESPONSE SYSTEMS TO THE DEPARTMENT OF SOCIAL SERVICES (DIVISION OF HEALTH) AND THE DEPARTMENT OF NATURAL RESOURCES (DIVISION OF ENVIRONMENTAL QUALITY).

GOAL: DEVELOP AND IMPLEMENT A PROGRAM TO PROTECT THE PUBLIC AND ENVIRONMENT FROM IMPROPERLY MANAGED AND DISPOSED OF RADIOACTIVE WASTE. ACHIEVE LEGISLATIVE AUTHORIZATION BY JULY 1, 1983, AND IMPLEMENT THE PROGRAM BY JULY 1, 1986. THE AGENCY RESPONSIBLE FOR EXECUTING THIS PROGRAM WILL BE THE DIVISION OF ENVIRONMENTAL QUALITY.

GOAL: TO ENSURE AN OCCUPATIONAL ENVIRONMENT WHICH CONTRIBUTES POSITIVELY TO THE HEALTH AND WELL-BEING OF WORKERS, THEIR FAMILIES, AND THE STATE AT LARGE. THROUGH ELIMINATION OF RISKS OF ILLNESS AND INJURY IN THE OCCUPATIONAL ENVIRONMENT AND SURROUNDING AREA.

GOAL: ESTABLISH HOUSING CODES FOR ALL AREAS OF THE STATE THAT DO NOT PRESENTLY HAVE ONE.

OBJECTIVE: Enforce housing codes by 1985 in new and old buildings that are either publicly funded or rental units.

GOAL: ENSURE THAT MISSOURIANS HAVE ACCESS TO KNOWLEDGE ON PREVENTING ACCIDENTS IN THE HOME.

OBJECTIVE 1: Encourage community educational programs about home safety.

OBJECTIVE 2: Coordinate and expand activities of poison control centers statewide.

GOAL: ALL PERSONS IN MISSOURI SHOULD BE ENSURED OF PROTECTION FROM FOODBORNE DISEASES AND HARMFUL CHEMICALS AT FOOD SERVICE ESTABLISHMENTS AND FROM FOOD SUPPLIERS AND SHOULD HAVE AN ADEQUATE CHOICE OF HIGH QUALITY AND NUTRITIOUS FOOD BASED ON SOCIAL AND CULTURAL CHOICE.

GOAL: STRICT ENFORCEMENT OF FOOD LAWS SHOULD BE IN EFFECT IN 1983.

OBJECTIVE: All eating establishments should be inspected and censored if necessary on a regular basis.

Biomedical and Consumer Product Safety

GOAL: A UNIFIED PROGRAM FOR ENFORCEMENT OF BIOMEDICAL AND CONSUMER PRODUCTS SAFETY LAWS BE ESTABLISHED.

GOAL: A PUBLIC EDUCATION PROGRAM SHOULD BE ESTABLISHED JOINTLY BY THE DIVISION OF HEALTH, THE DEPARTMENT OF EDUCATION, AND THE DEPARTMENT OF CONSUMER AFFAIRS TO MAKE THE PUBLIC AWARE OF THE SAFETY ISSUES INVOLVED IN THE VARIOUS BIOMEDICAL AND OTHER CONSUMER PRODUCTS TO WHICH THEY CAN BE EXPOSED.

Special Issues

GOAL: BY 1983, THE PLANNING COMMITTEE OF THE MHCC SHOULD ESTABLISH AN ENVIRONMENT TASK FORCE CHARGED WITH ADDRESSING BOTH ENVIRONMENTAL AND PREVENTIVE AREAS OF CONCERN BY ENCOURAGING COORDINATION OF THE WORK OF ALL PUBLIC AND PRIVATE AGENCIES INVOLVED IN HEALTH CARE.

GOAL: BY 1983, THE MISSOURI SHPDA SHOULD ESTABLISH, THROUGH COOPERATION WITH THE DIVISION OF ENVIRONMENTAL QUALITY AND OTHER APPROPRIATE AGENCIES, AN INTERAGENCY COUNCIL ON ENVIRONMENTAL HEALTH CHARGED WITH COORDINATING AND MANAGING STATE AGENCY ACTIVITIES RELATED TO ENVIRONMENTAL HEALTH.

GOAL: BY 1984, CANCER SHOULD BE ESTABLISHED AS A REPORTABLE DISEASE WITH CANCERS BEING REPORTED TO THE MISSOURI CANCER REGISTRY.

GOAL: BY 1984, AN EPIDEMIOLOGY SURVEILLANCE TEAM SHOULD BE ESTABLISHED WITHIN THE DIVISION OF HEALTH (AND IN COOPERATION WITH OTHER STATE AGENCIES) TO MONITOR AND INVESTIGATE ENVIRONMENTALLY PRODUCED DISEASES AND UNUSUAL OCCURRENCE OF DISEASES IN TIME-SPACE CLUSTERS.

GOAL: ENCOURAGE WELLNESS, HEALTH PROMOTION, LIFESTYLE MODIFICATION AND INSURANCE INCENTIVES THROUGH APPROPRIATE RESOURCES SUCH AS HEALTH FAIRS, PRIVATE INDUSTRY AND INSURANCE COMPANIES, ETC.

PREVENTION, DETECTION AND REFERRAL

Preventive Health Services

GOAL: TO ENABLE MISSOURI'S POPULATION TO HAVE ZERO INCIDENCE OF IMMUNIZABLE DISEASES.

OBJECTIVE 1: By 1983, immunization rates for polio, DPT, rubeola, and rubella for school age children (K-12) should be at least 95 percent.

OBJECTIVE 2: By 1983, the immunization rate for mumps for Missouri school age children (K-12) should be at least 90 percent.

Well Person Maintenance

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE DISEASE THROUGH THE PROVISION OF HEALTH PROMOTION PROGRAMS IN PRIMARY AND ACUTE CARE SETTINGS.

OBJECTIVE 1: By 1983, every hospital in Missouri should have developed a patient education program.

OBJECTIVE 2: By 1983, all hospitals should offer community health education programs.

OBJECTIVE 3: By 1984, primary care settings should be providing a range of health promotion programs including well person maintenance, screening, early diagnosis, and health education.

OBJECTIVE 4: By 1984, health maintenance clinics should be accessible to everyone in the State.

OBJECTIVE 5: Adult health education programs should be expanded to include non-medical settings.



EMERGENCY MEDICAL SERVICES (EMS)

GOAL: TO PLAN, DEVELOP, AND IMPLEMENT A TOTALLY COORDINATED EMERGENCY MEDICAL SERVICES SYSTEM THAT IS AVAILABLE TO EVERYONE IN MISSOURI.

OBJECTIVE 1: By 1981, a statewide 911 or a single access number should be implemented.

OBJECTIVE 2: By 1983, the Bureau of Emergency Medical Services (BEMS) should coordinate and develop a state EMS communications plan which includes ambulance-to-hospital communications, medical control, central dispatch, and interface with Public Safety.

OBJECTIVE 3: By 1980, the Bureau of Emergency Medical Services should develop public information and education programs which utilize telephone stickers, information brochures, public presentations, filmstrips, and the media.

OBJECTIVE 4: By 1980, the current emergency services legislation should be amended to include patient care standards in order to revoke personnel licenses for repeated offenses of negligence.

OBJECTIVE 5: By 1980, the current emergency services legislation should be amended to keep the coordinated systems approach of the seven EMS regions ongoing once Federal funding is lost, through a cost-matching procedure with local areas.

OBJECTIVE 6: By 1980, legislation should be passed requiring all ambulance personnel to be minimally trained in the Department of Transportation 81-hour course or its equivalent.

OBJECTIVE 7: By 1981, the Bureau of Emergency Medical Services, with the advice and assistance of the Missouri Hospital Association, should establish a standardized Emergency Room form used by all emergency facilities throughout the State.



MATERNAL AND CHILD HEALTH

GOAL: ASSURE THAT ALL MISSOURIANS HAVE ACCESS TO ADEQUATE FAMILY PLANNING AND PRENATAL CARE SERVICES.

Family Planning

OBJECTIVE 1: By 1985, decrease overall percentage of unmet needs for family planning services to 35 percent; for adolescents to 40 percent.

OBJECTIVE 2: By 1985, decrease the birth rate to women under 18 by 10 percent through the reduction in the incidence of teenage pregnancy.

OBJECTIVE 3: By 1985, decrease the incidence of abortion by 10 percent.

Prenatal Care

OBJECTIVE 1: By 1985, reduce the infant death rate from the present rate of 13.7 to 11.5 per 1,000 live births with no population subgroups exceeding 17.0 per 1,000 live births.

OBJECTIVE 2: Establish a comprehensive family planning and prenatal care network throughout the State.

Nutrition

GOAL: TO DECREASE THE INCIDENCE AND PREVALENCE OF NUTRITIONAL AND NUTRITION-RELATED PROBLEMS FOR ALL WOMEN, INFANTS, AND CHILDREN IN MISSOURI.

OBJECTIVE 1: By 1986, increase the utilization of supplemental food programs.

OBJECTIVE 2: By 1983, all supplemental food programs should be required to provide adequate nutrition education.

OBJECTIVE 3: By 1983, develop and implement a Nutrition component in the K-12 School Health Education Program.

OBJECTIVE 4: By 1986, all school districts should obtain the services of a professional nutritionist to assess the nutritional status of school children, provide community education, and assist in meal planning.

OBJECTIVE 5: By 1984, all family planning and primary care programs should provide nutritional screening, assessment, and education.

Fetal Alcohol Syndrome

OBJECTIVE 1: By 1986, provider and consumer knowledge about the fetal alcohol syndrome should be increased through coordinated efforts of the Division of Alcohol and Drug Abuse (ADA), the Division of Mental Retardation/Developmental Disabilities (MR/DD), and the Bureau of Community Health Education.

OBJECTIVE 2: By 1986, the accessibility, quality, and number of treatment facilities and educational programs for women with substance abuse problems should be increased through the direct intervention of the Department of Mental Health including cooperation with the Division of Health, Bureau of Community Health Education.

Sudden Infant Death Syndrome (SIDS)

GOAL: INCREASE EFFORTS TO ASSIST PARENTS, EDUCATION COMMUNITIES, AND PROMOTE RESEARCH ABOUT SIDS.

OBJECTIVE 1: By 1986, increase the availability of autopsies for all sudden, unexpected deaths of children up to one year of age.

OBJECTIVE 2: By 1986, provide direct counseling to all families affected by a Sudden Infant Death Syndrome loss.

OBJECTIVE 3: By 1984, provide education programs about SIDS for all health care providers, public safety officials, and social service workers.

Dental

GOAL: TO REDUCE THE INCIDENCE OF DENTAL DISEASES IN ALL CHILDREN IN MISSOURI.

OBJECTIVE 1: By 1984, develop and implement a dental health component in the K-12 Comprehensive School Health Education Program.

OBJECTIVE 2: By 1986, all school districts that have children residing in non-fluoridated water districts should provide a fluoride mouthrinse program.

OBJECTIVE 3: By 1986, all water districts that service populations 850 or over should provide fluoridated water.

OBJECTIVE 4: By 1986, services necessary to prevent disease and restore and maintain oral health in children should be available and accessible to all children.

OBJECTIVE 5: By 1986, basic dental services should be available and accessible for all physically handicapped, mentally retarded, and developmentally disabled children ages 3 to 21.

Handicapped Children

GOAL: TO RESTORE TO MAXIMUM PHYSICAL AND MENTAL DEVELOPMENT, THOSE INDIVIDUALS UNDER THE AGE OF 21 WHO HAVE AN ORGANIC DISEASE, DEFECT, OR CONDITION WHICH HINDERS NORMAL GROWTH AND DEVELOPMENT.

OBJECTIVE 1: By 1986, increase the availability of referral, diagnosis, and treatment services.

OBJECTIVE 2: By 1985, increase by 50 percent the number of handicapped children served by Crippled Children Services.

OBJECTIVE 3: By 1982, assure that all children receiving CCS services are referred to other necessary health and social services.

OBJECTIVE 4: By 1985, assure that policies and procedures are in place for quality control, utilization review, and cost analysis.

OBJECTIVE 5: By 1985, assure that 100 percent of eligible children are receiving SSI-DCU services.

Child Abuse and Neglect

GOAL: REDUCE THE INCIDENCE OF ACCIDENTAL, NEGLECTFUL, OR ABUSIVE HARM TO INFANTS AND CHILDREN.

OBJECTIVE 1: By 1985, coordinate with the Division of Family Services, Division of Health, and Department of Mental Health a program for identification and referral of mothers at high risk for child abuse and neglect.



OUTPATIENT SERVICES

GOAL: TO INCREASE THE ACCESSIBILITY OF PRIMARY CARE SERVICES IN MISSOURI BY AUGMENTING THE EXISTING SYSTEM THROUGH THE USE OF ALTERNATIVE DELIVERY METHODS.

OBJECTIVE 1: By 1984, incentive and alternative education programs should be developed and initiated for the education and recruitment of manpower determined to be required to meet the primary care needs in Missouri.

OBJECTIVE 2: By 1981, the feasibility of altering the concept of the hospital as a setting primarily for acute care should be determined.

OBJECTIVE 3: By 1983, the feasibility of expanding the use of rural public health units in the delivery of primary care services should be determined and, where possible, a program for implementation should be developed.

OBJECTIVE 4: A study of alternative systems dealing with insurance, ownership, and various payment mechanisms should be completed and included in the overall model for primary care services.



MENTAL HEALTH

GOAL: INCREASE PROVIDER AND CONSUMER KNOWLEDGE ABOUT FETAL ALCOHOL SYNDROME THROUGH COORDINATED EFFORTS OF THE DIVISION OF ALCOHOLISM AND DRUG ABUSE (ADA), THE DIVISION OF MENTAL RETARDATION/DEVELOPMENTAL DISABILITIES, AND THE DIVISION OF HEALTH.

GOAL: REDUCTION OF THE PREVALENCE OF MENTAL RETARDATION THROUGH A PROGRAM OF PUBLIC EDUCATION FOR PRIMARY PREVENTION OF PERINATAL MORBIDITY AND MORTALITY. (THIS WOULD INCLUDE THE EFFECTS OF NUTRITION, PRENATAL CARE, MATERNAL AGE, SMOKING, ALCOHOL AND OTHER DRUGS.)

GOAL: THE DEPARTMENT OF MENTAL HEALTH SHOULD CONTINUE USING THE FOLLOWING GENERAL PRIORITIES FOR FUTURE INTEGRATED HEALTH SYSTEMS PLANNING:

1. promotion of community based mental health programs;
2. preventive mental health services;
3. services to special "target" populations (e.g., women, youth, elderly, social minorities); and
4. deinstitutionalization with sensitivity (appropriate support systems must be established).

GOAL: THE DIVISION OF COMPREHENSIVE PSYCHIATRIC SERVICES SHOULD INCREASE THEIR TREATMENT CAPABILITY FOR HIGH RISK POPULATIONS AND POPULATIONS IN AREAS OF UNMET NEED BY ASSURING AVAILABILITY AND ACCESSIBILITY TO REFERRAL AND TREATMENT SERVICES.

GOAL: THE DEPARTMENT OF MENTAL HEALTH, IN COOPERATION WITH OTHER APPROPRIATE STATE AGENCIES, SHOULD ELIMINATE ANY INAPPROPRIATE INSTITUTIONALIZATION AND SHOULD ENSURE THE AVAILABILITY OF APPROPRIATE SITES FOR ITS COMMUNITY PLACEMENT PROGRAM.

GOAL: INCREASE THE AWARENESS OF THE ROLE AND SCOPE OF CHEMICAL SUBSTANCE ABUSE AND THE IMPORTANCE OF PERSONAL DECISIONS RELATING TO THAT USE IN SOCIETY SHOULD BE INCREASED AMONG PRIMARY AND SECONDARY SCHOOL AGE YOUTH THROUGH INTEGRATION OF SUBSTANCE ABUSE EDUCATION INTO THE SCHOOL HEALTH CURRICULUM.

GOAL: THE DEPARTMENT OF MENTAL HEALTH SHOULD CONTINUE TO INCREASE THE ACCESSIBILITY, QUALITY, AND NUMBER OF TREATMENT FACILITIES AND EDUCATIONAL PROGRAMS FOR THE AGED WITH SUBSTANCE ABUSE PROBLEMS.

GOAL: THE DIVISION OF ALCOHOLISM AND DRUG ABUSE AND THE STATE'S HEALTH AGENCIES SHOULD CONTINUE DEVELOPMENT OF GOALS AIMED AT INCREASING THE AVAILABILITY AND ACCESSIBILITY OF SUBSTANCE ABUSE PREVENTION AND TREATMENT SERVICES TO UNDERSERVED POPULATIONS IN MISSOURI.

GOAL: THE DIVISION OF MENTAL RETARDATION/DEVELOPMENTAL DISABILITIES SHOULD CONTINUE TO CONSIDER THE FOLLOWING FOUR AREAS OF CONCERN IN PLANNING FOR MR/DD HEALTH SERVICES:

1. Public and private MR/DD resources at the community level should coordinate programs with appropriate segments of the health care system included in Public Law 93-641 (The National Health Planning and Resources Development Act of 1974).
2. Mental retardation could be prevented or seriously reduced in prevalence (e.g., fetal-alcohol syndrome) through preventive activities and a comprehensive health care delivery system.
3. The program placing MR/DD patients in community facilities (community placement programs) should be monitored in order to upgrade the quality of the evaluation and treatment of placements.
4. Cooperation between regional MR/DD councils and health systems agencies and between the state

I-MH-3

MR/DD council and the SHCC is not mandated. However, cooperative efforts for mental health services and prevent potential overlap in many areas of service and in review and approval activities.

GOAL: THE MISSOURI LEGISLATURE SHOULD ESTABLISH THE LEGAL BASIS FOR ALTERNATIVE FINANCING FOR MENTAL HEALTH CARE.



MAINTENANCE SERVICES

GOAL: TO PROMOTE THE APPROPRIATE USE OF IN-HOME SERVICES BY IMPROVING THE AVAILABILITY, ACCESSIBILITY, AND QUALITY OF THESE SERVICES, AND TO ASSIST CONSUMERS IN OBTAINING THE APPROPRIATE PACKAGE OF SERVICES NEEDED TO MAINTAIN THEIR INDEPENDENCE.

OBJECTIVE 1: By 1983, all counties in Missouri shall be served by a certified home health agency for home health aide visits.

OBJECTIVE 2: By 1980, a methodology for determining long-term care need as it pertains to home health care will be developed and included in the State Health Plan.

OBJECTIVE 3: By 1982, social work services in rural Missouri should be available within a 45 minute driving time.

OBJECTIVE 4: By 1982, the number of home health visits under Medicaid should be consistent with the number of visits under Medicare, Part B but not less than 100 visits per year.

OBJECTIVE 5: By 1981, voluntary and/or religious organizations, teaching institutions, home health agencies, health care institutions, and the Missouri Office of Aging should consider offering educational programs and other supporting services to families caring for infirmed aged relatives.

OBJECTIVE 6: By 1980, Certificate of Need legislation which includes home health services under its regulation and a licensure law should be enacted to regulate home health agencies.

GOAL: BY 1984, THE NUMBER OF DAY CARE PROJECTS SHOULD BE INCREASED. DATA SHOULD ALSO BE COMPILED AND EVALUATED IN ORDER TO DETERMINE SERVICE COST EFFECTIVENESS.

OBJECTIVE 1: By 1983, three additional experimental day care centers for the aged should be developed in Missouri.



HABILITATION AND REHABILITATION SERVICES

GOAL: TO ENSURE THAT ALL PATIENTS WHO NEED REHABILITATION CARE RECEIVE THE FULL RANGE OF QUALITY RESTORATIVE CARE IN THE MOST COST-EFFECTIVE SETTING CONSISTENT WITH THEIR NEEDS.

OBJECTIVE 1: To encourage the training and recruitment of Physical Medicine and Rehabilitation Services personnel.

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement barriers to outpatient rehabilitation services should be eliminated where it facilitates a more appropriate use of rehabilitation care dollars.

OBJECTIVE 3: By 1981, hospitals with distinct Physical Medicine/Rehabilitation units should work toward meeting the Joint Commission on Accreditation of Hospital Standards for the provision of care.

OBJECTIVE 4: By 1981, medical training centers in Missouri which prepare practitioners in restorative care should adequately define the total needs of the rehabilitation patients and should ensure the preparedness of graduates to effectively deliver care within the rehabilitation team concept.

GOAL: TO ENSURE THE DEVELOPMENT OF A SYSTEM FOR APPROPRIATE PLACEMENT IN RESIDENTIAL FACILITIES WHERE POSITIVE BENEFIT CAN BE RECEIVED.

OBJECTIVE 1: By 1984, quality housing should be made available which meets the needs of the differing degrees of disability among the population of developmentally disabled persons in Missouri.

OBJECTIVE 2: By 1984, the service gap for the provision of case-management services for the developmentally disabled should be reduced by ten percent.

GOAL: BY 1984, EACH TREATMENT SERVICE GAP SHOULD BE REDUCED BY A MINIMUM OF TEN PERCENT.

OBJECTIVE 1: By 1984, special attention should be given to non-ambulatory patients in meeting the above goal.

GOAL: BY 1984, THE OVERALL AVAILABILITY OF THERAPY SERVICES IN THE PATIENT'S HOME AND IN THE NURSING HOME SETTING SHOULD BE INCREASED BY 25 PERCENT IN ORDER THAT MORE PATIENTS MAY BENEFIT FROM THERAPY SERVICES OUTSIDE THE HOSPITAL SETTING.

OBJECTIVE 1: By 1984, the percentage of nursing homes providing physical therapy should be at least 45 percent in all health service areas.

OBJECTIVE 2: By 1984, the percentage of nursing homes providing occupational therapy should be at least 30 percent in all health service areas.

OBJECTIVE 3: By 1984, the percentage of nursing homes providing speech therapy should be at least 30 percent in all health service areas.

OBJECTIVE 4: By 1984, the number of certified home health agencies offering home therapy care should increase their service capacity in order to reduce the number of unserved counties by 50 percent.

OBJECTIVE 5: By 1981, Medicaid should reimburse home services for physical therapy.

OBJECTIVE 6: By 1983, Medicaid should reimburse home services for occupational therapy and speech therapy.

PLANNING

GOAL: TO ENSURE THE AVAILABILITY AND ACCESSIBILITY OF A COMPREHENSIVE AND FLEXIBLE COMPUTER-BASED INFORMATION SYSTEM.

OBJECTIVE 1: By 1982, a uniform and comparable data reporting system for all hospitals in Missouri should be developed.

RESOURCE ALLOCATION

GOAL: TO ENSURE THE DEVELOPMENT, MAINTENANCE, AND DISTRIBUTION OF APPROPRIATE SKILLS AND NUMBERS OF HEALTH CARE PERSONNEL ADEQUATE TO EFFECTIVELY AND EFFICIENTLY SERVE THE POPULATION.

OBJECTIVE 1: By 1983, the distribution of manpower services should be improved so that services are more readily available and accessible in a cost-effective manner to 50 percent of the areas designated as underserved by the Department of Health and Human Services (DHHS).

FINANCING AND COST EFFECTIVENESS

GOAL: TO ENSURE THAT THE LEVEL OF MEDICAL PRICE INFLATION DOES NOT EXCEED THE LEVEL OF GENERAL INFLATION.

OBJECTIVE 1: By 1983, changes within the total market structure of the health care system should be implemented which will lower the level of medical price increases so that it is more than 1.25 times the level of general price increases.



MEDICAL FACILITIES APPENDIXGeneral Hospitals

GOAL: THE SUPPLY OF COMMUNITY HOSPITAL BEDS SHOULD ADEQUATELY REFLECT COMMUNITY NEED.

OBJECTIVE 1: By 1985, the total number of excess acute care beds should be reduced by 2,996 beds (from 28,209 to 25,213; 28,209 represents 27,369 licensed beds plus 840 approved but not licensed. Refer to Table P2-GMS-17 of the Medical Facilities Appendix to the State Health Plan.

OBJECTIVE 2: By 1985, the number of licensed acute care hospital beds per 1,000 population should be reduced from 5.6 to 4.11.

OBJECTIVE 3: By 1985, the statewide average number of patient days per 1,000 population should be reduced by 222 from 1,422 to 1,200.

OBJECTIVE 4: By 1985, the statewide desired average annual occupancy rate of 80 percent for hospitals in aggregate should be applied generally to bed size as follows:

<u>Bed Size</u>	<u>Optimal Occupancy*</u>
30	70.2%
40	73.1%
50	75.2%
60	76.9%
70	78.2%
80	79.3%
90	80.3%
100	81.1%
110	81.8%
120	82.5%
130	83.0%
140	83.5%
150	84.0%
160	84.4%
170	84.8%
180	85.2%
190	85.5%
200	85.9%
-	-
-	-
-	-
1,200	93.7%

(see page P2-GMS-29 for Optimal Occupancy formula.

Obstetrical Services

GOAL: QUALITY PRENATAL CARE SHOULD BE AVAILABLE AND ACCESSIBLE TO ALL WOMEN IN MISSOURI.

OBJECTIVE 1: To reduce infant mortality to 12.0 deaths per 1,000 live births.

OBJECTIVE 2: By 1981, the Health Systems Agencies in Missouri should address the regionalization of obstetrical servies in their health systems plans.

OBJECTIVE 3: By 1981, the health systems agencies should identify all Level I, Level II, and Level III obstetrical facilities in their health service area.

OBJECTIVE 4: By 1983, all Level II and Level III obstetrical facilities should ensure that they are operating at a 75 percent average annual occupancy rate.

OBJECTIVE 5: By 1983, all Level II and Level III obstetrical facilities should ensure that they are operating at a desired minimum of 1,500 births annually.

Neonatal Special Care Services

GOAL: QUALITY NEONATAL CARE SHOULD BE AVAILABIE AND ACCESSIBLE TO ALL INFANTS IN MISSOURI.

OBJECTIVE 1: By 1983, Missouri's HSAs should address the regionalization of neonatal services linked with obstetrical services.

GOAL: THE SUPPLY OF COMMUNITY NEONATAL BEDS SHOULD ADEQUATELY REFLECT COMMUNITY NEED.

OBJECTIVE 1: By 1983, the number of neonatal intensive and intermediate care beds should not exceed four per 1,000 live births in a defined neonatal service area.

OBJECTIVE 2: By 1983, all Level II and Level III neonatal special care units should obtain a minimum of 15 beds.

Pediatric Inpatient Services

GOAL: THE SUPPLY OF COMMUNITY PEDIATRIC SERVICES SHOULD REFLECT COMMUNITY NEED.

OBJECTIVE 1: By 1981, the Health Systems Agencies should identify all pediatric facilities in their health service areas, as defined in the "National HealthPlanning Guidelines."

OBJECTIVE 2: By 1983, all pediatric units in urban hospitals should consolidate or share services in order to maintain a desired minimum of 20 beds per unit.

OBJECTIVE 3: By 1983, all hospital based pediatric units should ensure that they are operating at a 65 percent to 75 percent annual occupancy depending on bed size as follows: 20-39 beds, 65% percent; 40-79 beds, 70% percent; and 80+ beds 75 percent.

Open-Heart Surgery

GOAL: THE AVAILABILITY OF SERVICES SHOULD ADEQUATELY REFLECT COMMUNITY NEED.

OBJECTIVE 1: By 1983, there should be a desired minimum of 200 open-heart procedures performed annually within any institution performing open-heart surgery.

OBJECTIVE 2: By 1983, there should be a desired minimum of 100 pediatric heart procedures performed annually within any institution in which pediatric open-heart surgery is performed.

OBJECTIVE 3: By 1983, additional open-heart units should not be established unless each existing unit is operating at 350 adult open-heart cases or 130 pediatric open-heart cases per year.

Cardiac Catheterization

GOAL: THE AVAILABILITY OF SERVICE SHOULD ADEQUATELY REFLECT COMMUNITY NEED.

OBJECTIVE 1: By 1983, there should be a desired minimum of 300 cardiac catheterizations performed annually in any adult catheterization unit.

OBJECTIVE 2: By 1983, there should be a desired minimum of 150 pediatric cardiac catheterizations performed annually in any pediatric catheterization unit.

OBJECTIVE 3: By 1983, additional adult catheterization units should not be opened unless the number of studies per year exceeds 500 in a health service area. Any proposed facility meeting this requirement must also perform open-heart surgery meeting the open-heart surgery goals.

Radiation Therapy

GOAL: THE AVAILABILITY OF SERVICES SHOULD ADEQUATELY REFLECT COMMUNITY NEED.

OBJECTIVE 1: By 1983, all megavoltage radiation therapy units should serve a population of at least 150,000 persons and treat at least 300 cancer cases annually.

OBJECTIVE 2: By 1983, additional megavoltage units should not be open unless each existing megavoltage unit in a health service area is performing at least 6,000 treatments per year.

Computerized Tomographic (CT) Scanners

GOAL: THE SUPPLY OF COMPUTERIZED TOMOGRAPHIC (CT) SCANNERS SHOULD ADEQUATELY REFLECT THE COMMUNITY NEED.

OBJECTIVE 1: By 1983, both head and body CT Scanners should operate at a desired minimum based on the scan time and body to head ratio as established in the Medical Facilities Appendix of the State Health Plan.

OBJECTIVE 2: By 1983, additional CT Scanners should not be approved unless each existing scanner in a health service area is performing at a rate greater than the minimum based on the machine scan time and body to head ratio as established in Table P2-G-3 on the Medical Facilities Appendix and the operators of the proposed equipment will set in place data collection and utilization review systems.

End-Stage Renal Disease (ESRD)

GOAL: ASSURE THE AVAILABILITY OF QUALITY END-STAGE RENAL DISEASE (ESRD) SERVICES.

OBJECTIVE 1: By 1983, all Health Systems Plans should be consistent with the standards and procedures contained in the Department of Health and Human Services regulations governing suppliers of ESRD programs.

Long-Term Care

GOAL: THE SUPPLY OF LONG-TERM BEDS SHOULD ADEQUATELY REFLECT COMMUNITY NEED.

OBJECTIVE 1: By 1985, the supply of SNF and ICF beds should conform to 50 beds per 1,000 population age 65 and over in non-SMSA counties and 42 beds per 1,000 population age 65 and over in SMSA counties. SMSA counties include the following: Boone, Buchanan, Cass, Clay, Franklin, Greene, Jackson, Jasper, Jefferson, Platte, Ray, St. Charles, St. Louis City, and St. Louis County.

GOAL: THERE SHOULD BE AN ASSESSMENT OF THE MEDICAL ASSISTANCE PROGRAM (MEDICAID) IN MISSOURI, AS IT RELATES TO THE AGED OR CHRONICALLY ILL.

OBJECTIVE 1: By 1982, the appropriateness of the system of Medicaid reimbursement to long-term care providers in Missouri should be evaluated.

GOAL: TO UPGRADE THE QUALITY AND DISTRIBUTION OF LONG-TERM CARE FACILITIES IN ORDER TO PROVIDE SERVICES TO PATIENTS IN SAFE, FAMILIAR, AND PLEASANT SURROUNDINGS.

OBJECTIVE 1: By 1983, all planning for the construction of new long-term care facilities should take location into account as an important factor.

OBJECTIVE 2: By 1983, standards for the physical plant, as well as activities, services, and programs required by Medicare and Medicaid should be considered minimum standards for all new nursing home facilities. In addition, it is strongly encouraged that these standards be utilized by existing homes in modernization activities.

NOTE: Case-by-case deliberation in modernization is indicated.

OBJECTIVE 3: By 1983, all nursing homes not in compliance with minimum licensure standards, applicable to that facility when it was originally licensed, should undertake no modification or expansion unless the project is to correct a violation of the licensure statute, particularly in relation to life safety codes.

OBJECTIVE 4: By 1983, each nursing home should have in place a strong quality review system.

OBJECTIVE 5: By 1983, it is desired that every nursing home have substantial and direct community involvement in its operations.

OBJECTIVE 6: By 1984, all nursing homes should develop long-range plans to be submitted to the State Health Planning and Development Agency (SHPDA).

OBJECTIVE 7: By 1983, no approval should be given to facility proposals submitted by applicants who are currently involved in license revocation proceedings are resolved.

OBJECTIVE 8: By 1983, continuing education and opportunities to upgrade staff skills should be provided for all personnel in nursing homes.

OBJECTIVE 9: By 1983, consideration should be given to the training and utilization of now available "para-professionals" in those geographic areas where professionals are not now available. Such a program should be reviewed by 1985 and possible alternations in staffing requirements considered by the State's licensure program.

OBJECTIVE 10: By 1983, at each level of nursing home care, proposed departmental costs to patients in newly constructed nursing homes should be comparable to charges to the patients in currently licensed facilities based on facility size, licensure, geographic location, and type of resident placed. Any variance

from the current cost should be reviewed based on the above factors by the health service area where the facility is proposed.

OBJECTIVE 11: By 1983, nursing homes should be encouraged by the appropriate State agencies to develop shared staff, seervices, and programs with hospitals, other long-term care facilities, health related agencies, and community service organizations.

OBJECTIVE 12: By 1983, the Department of Social Services should identify data needs and sources, research methodologies, and should develop the capability for transition to prospective rate reimbursement by 1982. (Recognizing that moving from our present cost-reimbursement program to a prospective rate reimbursement plan is an evolutionary process.)

**CHAPTER II: HEALTH STATUS
AND
GENERAL DESCRIPTION OF THE STATE**

Introduction

A number of approaches have been used to evaluate the health status and plan for the health needs of Missourians. However, the foundation of any serious health status evaluation must be statistical. In population-based or need-based planning, the current health status of the population determines the need for a specific system of health services.

Information for population-based planning is normally collected from a variety of sources. Health professionals provide valuable insight on utilization and service needs. A community forum approach, normally in the form of public meetings, is employed to solicit health care consumer perceptions. Quantitative analysis of rates (per population) of those persons under treatment is used to determine the incidence of medical problems. Finally, indicators of social well-being, related to health, are identified in order to make judgments about the prevalence of unmet needs.¹ This health status section deals specifically with the last two approaches.

The use of illness (morbidity), death (mortality), and surrogate (e.g., socio-economic) indicators to measure health status presents both conceptual and informational problems. The present state of the art in health planning is such that measurement of the relative well-being of the population is necessary in order to determine "where we are" and "where we want to go". Problems in obtaining accurate and specific data in a timely manner, particularly morbidity data, have been widely acknowledged by health officials. Generally, data can be obtained for traditional indicators on a statewide basis while on a sub-State level, or for specific conditions or subgroups of a population, the availability of data is limited in both amount and specificity.

What has been attempted here is a twofold approach: (1) to provide benchmarks that illustrate the relative wellness of the population within Missouri and in comparison to the United States, and (2) to determine specific problem areas that need to be addressed relative to the overall health status of the population.

Under P.L. 93-641, as amended by P.L. 96-79, one of the key responsibilities is improving the health status of the State's population. In using the term "health status," a problem of definition is encountered. Historically, the definition of health has evolved into a comprehensive definition of the "complete person." The World Health Organization defines health as "a state of complete physical, social, and mental well-being and not merely the absence of disease or infirmity." Unfortunately, our capabilities for determining what is a "complete person," in a health related sense, are restricted due to data limitations in morbidity indicators as well as mortality data. Consequently, this section will not comprehensively describe "health"

as it is defined in the holistic sense, as much as it will be concerned with indicators of ill health, such as morbidity, mortality, and psycho-social adjustments. Despite this limitation, the relative levels of wellness and illness in this analysis can be derived and should be considered key determinants of a population's health status. Once the level of a population's health status, or ill health status, can be determined, the information can be utilized in planning for the reduction in the numbers of unnecessary early deaths and incapacitating illnesses.

This health status analysis is divided into four sections: (1) general health status indicators; (2) maternal and child health status; (3) adolescent through middle life health status; and (4) health status of the aged. Each health status indicator analyzed in each of these four sections is further broken down into the headings of Issue Identification, Issue Analysis, Recommendations, and Goals. The desired outcome of this analysis is to improve the capabilities for determining those groups most "at risk" and to create a representation of the health problems in the State.

Due to the resource and time constraints, the Missouri Health Coordinating Council will not address or establish indicators for every element of every "human condition" in its State Health Plan. However, as improvements in both data gathering and the conceptual use of data occur, the Missouri Health Coordinating Council will make every effort to incorporate the latest and most accurate information in this and subsequent editions of the State Health Plan.

A. HEALTH STATUS

I. GENERAL HEALTH STATUS

1. Mortality

Major Causes of Death - Issue Identification

Death rates are the oldest general measure of the health status of a population. Historically, they have been useful in documenting progress or decline in health status. Death rates are subject to the influence of two components - the onset of disease or an event (e.g., an accident) and the subsequent death (case-fatality). These two components represent possible intervention points; if a disease is preventable, then onset could be avoided, and if there is an effective treatment, death could be avoided. The preferred strategy would be to reduce incidence by preventing onset. Medical treatment which is directed at decreasing case-fatality often cannot avert disability or impairment of the survivor.² Inevitably, all humans eventually number in the mortality statistics, but it is in averting the untimely or preventable death where progress can be made.

Major Causes of Death - Issue Analysis

Missouri's overall death rates have traditionally been higher than National rates. The increased number of older persons in the State is an important factor linked to the higher rates. It is desirable, nevertheless, that Missouri rates compare favorably to U.S. rates when age cohorts are examined. This analysis will be done later in this component. Mortality rates for all causes of death in Missouri are shown in Table II-HS-1.

The five leading causes of death in Missouri in 1979 were heart disease, cancer, cerebrovascular disease, accidents, and chronic pulmonary disease. The incidence of the first three are shown in Table II-HS-2. (See Appendix Tables A-HS-1, A-HS-2, and A-HS-3 for a depiction of the ten leading causes of death in 1977, 1978, and 1979.) It should be noted that cause of death statistics for 1979 are classified according to the Ninth Revision of the International Classification of Diseases (ICD-9). ICD-9 has been used to classify causes of death occurring on or after January 1, 1979. Comparisons with mortality data from earlier years must be done with caution, since these were classified using different coding schemes (for example, causes of death in 1977 and 1978 were classified according to the Eighth Revision of the International Classification of Diseases/ICD-8). Consequently, certain diseases may show changes in their trends as a result of changes in definition.

II-HS-4

TABLE II-HS-1

CRUDE DEATH RATES PER 1,000 POPULATION, ALL CAUSES
1977-1978-1979

	1977	1978	1979
U.S.	8.8	8.8	8.7
MISSOURI	10.1	10.2	9.8
AREA I	9.1	9.2	8.9
AREA II	11.2	11.6	11.1
AREA III	9.3	9.2	9.1
AREA IV	11.0	10.8	10.2
AREA V	11.3	11.4	10.9

Reference: 1, 3, 4, 5, 6, 7, 8, 9.

TABLE II-HS-2

THREE LEADING CAUSES OF DEATH
CRUDE DEATH RATES PER 100,000 POPULATION
1972, 1977, 1978, 1979

Area	Heart Disease			
	1972	1977	1978	1979
U.S.	361.3	332.3	334.3	331.3
MISSOURI	423.8	382.3	379.5	369.0
AREA I	302.8	308.4	303.0	299.8
AREA II	531.9	432.0	439.0	432.3
AREA III	390.0	369.8	368.5	363.6
AREA IV	457.3	408.6	380.5	349.6
AREA V	459.0	419.4	424.6	396.0

Area	Cancer			
	1972	1977	1978	1979
U.S.	166.6	178.7	181.9	183.5
MISSOURI	188.7	194.5	201.9	203.3
AREA I	161.0	174.7	186.4	186.3
AREA II	210.9	201.4	212.0	211.6
AREA III	180.0	195.6	200.4	200.0
AREA IV	193.0	202.1	210.4	206.0
AREA V	194.0	197.1	203.3	224.1

Area	Cerebrovascular Disease			
	1972	1977	1978	1979
U.S.	100.9	84.1	80.5	76.9
MISSOURI	130.5	105.6	97.5	92.6
AREA I	98.4	96.5	91.1	83.9
AREA II	169.4	137.5	131.6	124.3
AREA III	100.0	84.1	75.4	73.3
AREA IV	163.4	117.5	109.6	106.8
AREA V	155.0	116.6	101.7	93.6

Reference: 1, 3, 4, 5, 6, 7, 8, 9, 10.

Major Cause of Death - Recommendations

Of the three major causes of death, in Missouri, only the mortality rate of cancer is increasing. The statewide mortality rates of both heart disease and cerebrovascular disease are decreasing.

Negative environmental effects which impact and exacerbate certain cancers are normally associated with lower socio-economic status,³ exposure to organic chemicals that are carcinogenic in laboratory animals, radiation exposure, harmful occupational exposures, and air pollution. Certain other cancer risks which are related more to lifestyle are associated with: methods of cooking foods, choice of certain foods, obesity, alcohol intake, and (perhaps the most significant and directly linked) cigarette smoking. Cigarette smoking is linked not only to lung cancer, but also cancers of the larynx, oral cavity, urinary bladder, and pancreas.⁴

Heart disease is still the number one killer, despite its decline in incidence. The reason for this decline is due partly to improved medical intervention such as coronary care units and the increased knowledge of cardio-pulmonary resuscitation. The improvement may also be attributed to the fact that many Missourians have changed their lifestyles to reflect more healthful practices. People are reducing the risk factors by altering patterns in diet, weight, smoking, and exercise.

Cardiovascular disease may cause severe disability. Strokes, chronic angina pectoris, and peripheral vascular diseases often result in pain, the need for limb amputation, and/or long-term disability.⁵ Stroke is the most widely known of the cardiovascular diseases. Heredity is an important factor in the development of heart disease and cerebrovascular disease. In particular, heredity seems to play a role in predisposing factors to cardiovascular disease such as high cholesterol levels, diabetes, and hypertension. The best way to counteract these heredity factors is to conscientiously adhere to healthful behaviors. Psycho-social stress may not be a causative agent in vascular disease, however, it can contribute to the severity of illness.⁶ It should be emphasized that stroke can often be prevented and controlled through the screening of persons with hypertension and through drugs.

Major Causes of Death - Goals

GOAL: BY 1985, MORTALITY DUE TO HEART DISEASE SHOULD BE REDUCED BY 10 PERCENT TO 332.1 DEATHS PER 100,000 POPULATION.

GOAL: BY 1985, CEREBROVASCULAR MORTALITY SHOULD BE REDUCED BY 20 PERCENT TO 74.1 DEATHS PER 100,000 POPULATION.

GOAL: BY 1985, THE RATE OF CANCER MORTALITY SHOULD NOT INCREASE.

Life Expectancy - Issue Identification

Life expectancy is defined as the average number of years remaining in a person's life at a particular age and is determined by race, sex, or other characteristics using age-specific mortality rates for the population with that characteristic. Simply, life expectancy is the most probable number of years that an individual in a specific population will live, provided he/she remains in that environment.

The rapid increase in life expectancy at birth during the 20th century has brought about many changes for Missourians. Living a longer life has increased the length of working life and has contributed to a fuller family life. Longevity has also resulted in the largest number of "aged" persons in the history of Missouri. It should be noted, however, that despite the vast growth in the health care industry and its technology, the life expectancy of the 45 year old male has increased by only 4 years since 1900.

Life Expectancy - Issue Analysis

Life expectancy in Missouri is an indicator which should be comparable to the U.S. and other similar States. Inherent in the increase in life expectancy is that we must work towards the more far-reaching goal of reducing preventable deaths and lowering their incidence to the irreducible minimums. A comparison with U.S. figures is shown in Table II-HS-3. The life expectancy of Missouri's population in 1979 according to sex is shown in Table II-HS-4.

In 1977, the State of Missouri was ranked 26th with respect to average life expectancy for the total population of the United States. The ten highest ranked States were: Hawaii, Minnesota, Utah, North Dakota, Nebraska, Kansas, Iowa, Connecticut, Wisconsin, and Oregon.

Life Expectancy - Recommendations

When one looks at the twenty highest ranked States, many comparable health problems can be found. Missouri, in comparison, has many problems which have contributed to its present position in the ranking by life expectancy. Areas IV and V share many of the problems that face the rural poor in the South, while the metropolitan areas have numerous health problems related to the large proportions of low income minority residents. In addition, there is much diversity in these high risk groups, each having multifaceted needs. Each indicator analyzed during the course of this health status assessment can be considered a factor related to life expectancy in Missouri.

Life Expectancy - Goals

GOAL: BY 1985, THE LIFE EXPECTANCY OF MISSOURI RESIDENTS SHOULD EQUAL OR EXCEED THE 1985 U.S. AVERAGE LIFE EXPECTANCY.

TABLE II-HS-3

LIFE EXPECTANCY
AT BIRTH, AGE 40, AND AGE 65
TOTAL POPULATION-U.S. AND MISSOURI
1977, 1978, 1979

SPECIFIED AGE AND YEAR	MISSOURI	U.S.
AT BIRTH	Remaining Life Expectancy, In Years	
1977	72.9	73.2
1978	73.1	74.0
1979	73.8	73.8
AT 40 YEARS		
1977	36.0	36.6
1978	36.3	36.7
1979	36.8	36.8
AT 65 YEARS		
1977	16.0	16.3
1978	16.2	16.4
1979	16.6	16.7

Reference: 3, 4, 5, 7, 8, 9.

TABLE II-HS-4
LIFE EXPECTANCY
AT BIRTH, AGE 40, AND AGE 65
ACCORDING TO SEX
MISSOURI
1979

AGE	MALE	FEMALE
	Remaining Life Expectancy, In Years	
AT BIRTH	69.9	77.7
AT 40 YEARS	33.5	40.0
AT 65 YEARS	14.2	18.6

Reference: 5.

2. Morbidity

Limitation of Activity Due to Chronic Conditions - Issue Identification

Since Missouri has a relatively large proportion of aged residents, it would be expected to have a greater proportion of persons with limitations of activity due to chronic conditions such as arthritis, cardiovascular disease, visual and hearing impairments, and physical handicaps. However, this situation only reinforces the need to offset much of this limitation of activity through prevention, treatment, and rehabilitation services. By emphasizing these methods of intervention, Missouri can reduce the overall number of disabilities and possibly postpone onset of the damaging effects of a considerable number of disabilities.⁸

Limitation of Activity Due to Chronic Conditions - Issue Analysis

Table A-HS-10 in the data appendix under Health Status exhibits estimates of the extent of limitation of activity due to chronic conditions for citizens of Missouri, the U.S., and the North Central Region. These estimates are derived from the Health Interview Survey, which collects information on a continuing basis by means of a probability sample of households, nationwide. The States included in the North Central Region are: Michigan, Ohio, Indiana, Illinois, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Nebraska, and Missouri.⁹

In Missouri, 17 percent of the population is limited with respect to activity. This figure is approximately 3 percent greater than the figures for the United States and the North Central Region. In addition, Missouri has more persons limited in amount or kind of activity and more persons who are unable to carry on major activity.

Interestingly, there is less than a 1 percent difference between the percentage of Missouri's non-white population who are limited in activity and the percentage of affected non-white residents of the United States and the North Central Region.

Limitation of Activity Due to Chronic Conditions - Recommendations

As revealed in the Issue Analysis, a relatively high percentage of Missouri's population is limited in activity. This illustrates the need to emphasize prevention and geriatric rehabilitative care. In addition, because Missouri has such a large proportion of its population that is limited in activity, the need is increased for such services as home delivered meals and homemaker/home health aides. Because

of the nature of the data, no goals will be developed for this indicator. The data on limitation of activity is derived from a Health Interview Survey and is the product of a synthetic estimating procedure. Whenever this procedure is used to derive Missouri estimates from U.S. data, the estimate cannot be used with complete accuracy. The rate will change only as the U.S. rate changes or the demographics of the Missouri population changes.

Limitation of Activity Due to Chronic Conditions - Goals

No goals will be established at this time.

Dental Health - Issue Identification

For good dental health, persons of all ages should see a dentist annually for prevention and detection of dental problems.

Dental Health - Issue Analysis

Table A-HS-11 in the data appendix under Health Status illustrates how annual dental visits in Missouri compare to the U.S. and the North Central Region based upon the Health Interview Survey estimates of 44 percent in Missouri. As indicated, Missouri has a considerably smaller percentage of persons (by 5 - 6 percent) who visit a dentist annually.

Dental Health - Recommendations

Poor dental health is definitely linked to lessening amounts of dental prophylaxis. Presently available data indicates that the dental health of most Missourians does not compare favorably with the surrounding States or the U.S. Only 44 percent of Missourians visit a dentist annually. This problem will be examined by age groups in other parts of this section.

Dental Health - Goals

No goals will be established at this time.

Tuberculosis - Issue Identification

Tuberculosis is a communicable disease usually affecting the lungs. It is caused by the tubercle bacillus. The organism enters the body through inhalation or ingestion, and can remain dormant for extended periods of time. Tuberculosis has been known as the disease of poverty. Overcrowding, poor nutrition, substance abuse, and other such factors give rise to the incidence of tuberculosis. Within the past thirty years, great strides have been taken in the treatment of tuberculosis. Drug therapy has grown in sophistication to the point where therapy results in the recovery of 95 percent of the initially treated cases. Patient cooperation is sometimes difficult to achieve as a significant proportion of the cases are from the lowest socio-economic strata. Resistance to the drugs may also hamper treatment.¹⁰ It is desired to reduce tuberculosis to a small number of isolated cases and a morbidity rate of 2 cases per 100,000 population. In light of the changes in preventing and treating tuberculosis, it is not unrealistic to think in terms of reducing the incidence of tuberculosis to a very small number of isolated cases. The potential for the elimination of this disease depends greatly on improvements in the general living conditions of much of our population.

Tuberculosis - Issue Analysis

Within Missouri, pockets of high tuberculosis morbidity occur in each of the five health service areas. Comparatively, in 1960, the tuberculosis morbidity rate was 33 per 100,000 population. Table II-HS-5 shows the trend in the incidence of tuberculosis cases in Missouri from 1970 to 1979, and the map which follows depicts how Missouri compares to other States for the period 1974 to 1976.

TABLE II-HS-5

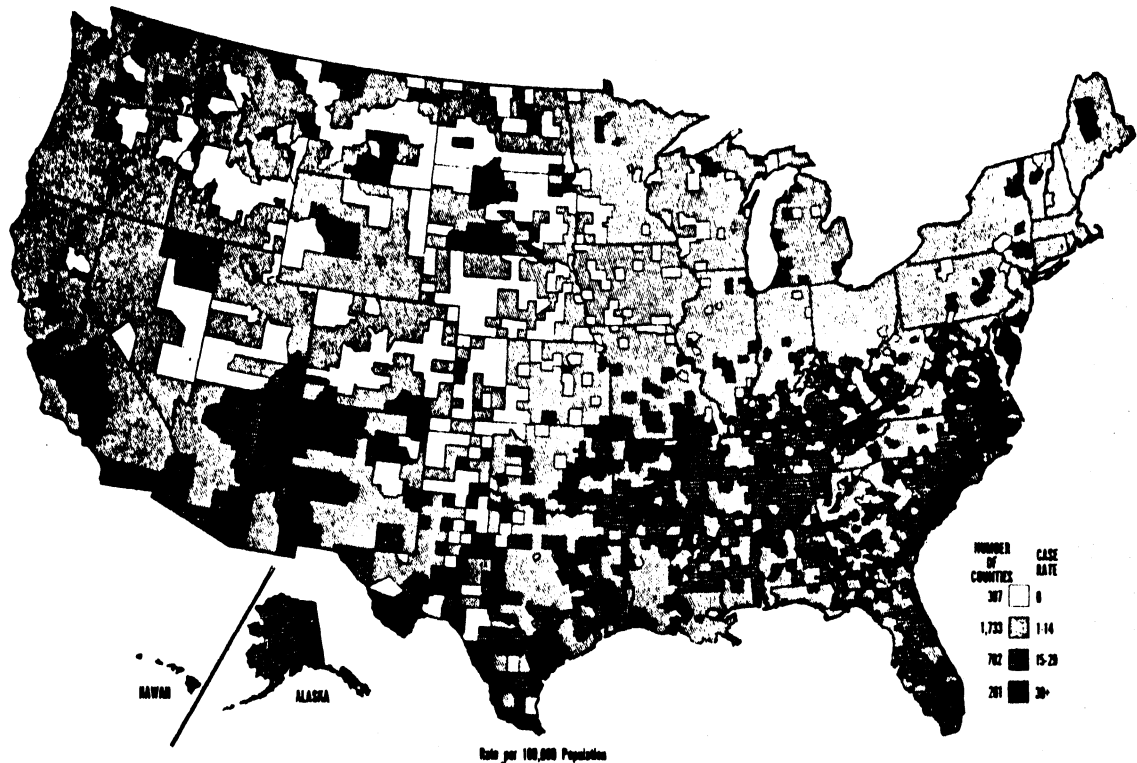
TUBERCULOSIS
NUMBER AND RATE PER 100,000 POPULATION - MISSOURI
1970 - 1979

Incidence	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
NUMBER	691	710	629	608	564	550	566	497	456	502
RATE	14.8	15.0	13.2	12.7	11.8	11.5	11.8	10.3	9.4	10.3

Reference: 13.

MAP II-HS-1

TUBERCULOSIS — Reported Average Cases per 100,000 Population by County, United States, 1974—1976



Reference: 12.

Tuberculosis - Recommendations

Map II-HS-1 indicates that Missouri shares a high tuberculosis morbidity rate with the neighboring States of Oklahoma, Arkansas, Kentucky, and Tennessee as well as with other Southern States. In contrast, other States in the North Central Region do not share this high prevalence of tuberculosis with Missouri.

Missouri must continue an aggressive public health effort in combating tuberculosis including public health education, epidemiological studies, control of occupational contaminants, and routine X-ray examinations of high risk groups and all tuberculin positive persons.¹¹

Tuberculosis - Goals

GOAL: BY 1985, THE STATEWIDE MORBIDITY RATE FOR TUBERCULOSIS SHOULD NOT EXCEED 7.5 CASES PER 100,000 POPULATION.

3. Accidental Deaths and Injuries and Violent Deaths

Accidental Deaths - Issue Identification

All accidents are theoretically preventable. However, complete elimination of mortality due to accidents has always been considered an unlikely possibility.¹² Efforts are normally aimed at reducing the incidence and prevalence of accidents. Prevention programs designed to reduce the incidence of poisoning and drowning, and public safety programs aimed at avoiding falls and the outbreak of fire are examples of effective strategies. Emergency medical services are also important as a "reactive" mechanism within the health care system to reduce the mortality rate from accidents.¹³ The mortality rate for accidents includes motor vehicle accident deaths (which have been singled out for analysis because of their prevalence), poisoning, falls, fires, and drowning. Prevention of motor vehicle deaths is the key to significantly lowering the number of accidental deaths. Important prevention strategies must include continuing public education efforts aimed at increasing the cooperation among Missourians in complying with the 55 m.p.h. speed limit, and a reduction in the use of alcohol (approximately 25,657 arrests for driving while intoxicated were reported to the Missouri State Highway Patrol's crime index in 1979). Other efforts aimed at lowering the auto accident mortality rate include emphasis on highway safety improvement and automobile safety design.

Accidental Deaths - Issue Analysis

In Missouri, the mortality rate from accidents has decreased by 19.0 percent since 1972, while for the U.S. it decreased 12.3 percent between 1972 and 1979. In 1979, the accidental death rate in Missouri was slightly below the rate for the Nation.

TABLE II-HS-6

ACCIDENTAL DEATHS RATE PER 100,000 POPULATION 1972, 1977, 1978, 1979

Area	1972	1977	1978	1979
U.S.	54.6	47.7	48.4	47.9
MISSOURI	58.5	49.4	51.3	47.4
AREA I	55.1	45.6	48.9	45.4
AREA II	72.6	56.7	60.3	55.2
AREA III	50.0	39.3	40.3	37.3
AREA IV	73.3	63.4	58.5	52.6
AREA V	77.0	60.6	68.0	64.7

Reference: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

As Table II-HS-7 illustrates, Missouri's motor vehicle death rate in 1979 is slightly lower than the National rate, and based upon the Traffic Fatality Rate per 100 million miles of travel as computed by the Highway Patrol, the fatality rate in Missouri has been at record lows since the initiation of the 55 miles per hour speed limit. Figure A-HS-1 in the data appendix under Health Status shows the Traffic Fatality Rates per 100 million miles of travel from 1961 to 1979. The 1979 figure of 3.36 fatalities per 100 million miles traveled is the lowest ever recorded in the State, and is lower than the nationwide figure of 3.5 deaths per 100 million miles in 1979.

TABLE II-HS-7

MOTOR VEHICLE DEATHS
RATES PER 100,000 POPULATION
1977, 1978, 1979

Area	1977	1978	1979
U.S.	22.9	24.0	24.5
MISSOURI	24.3	24.9	23.7
AREA I	22.3	22.7	22.9
AREA II	28.4	29.7	29.2
AREA III	18.1	18.2	17.8
AREA IV	17.3	32.8	26.5
AREA V	28.4	34.1	31.5

Reference: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Accidental Deaths - Recommendations

The greater number of accidental deaths in Missouri as compared to the U.S. may be attributed to the higher proportion of the aged who are at a greater risk of accidents. The rural nature of the State and the large number of secondary roads may also contribute to the high overall incidence of accidental deaths (e.g., farm related accidents, motor vehicle accidents). Health service areas which are predominantly rural (Areas II, IV, and V) have higher accidental death rates and higher motor vehicle accidental deaths than do the urban health service areas (Areas I and III). The present overall decline in Missouri's accident rate is largely due to a decline in automobile deaths.

Accidental Deaths - Goals

GOAL: BY 1985, MORTALITY DUE TO ACCIDENTS SHOULD BE REDUCED BY 16 PERCENT TO 39.8 PER 100,000 POPULATION.

Suicide - Issue Identification

Mortality due to suicide is a surrogate indicator of mental well-being and physical health.

Internationally, Greece has one of the lowest suicide rates (3.4 per 100,000 population) and Finland has one of the highest (25.1).¹⁴ Missouri is usually somewhere between these two extremes. Studies have indicated that serious or successful suicide attempts seem to be more predominant among older persons, males, those divorced, single, widowed, and those who are socially isolated.¹⁵ Adolescent suicide is on the rise as well. Efforts should be directed towards reducing these rates through strategies affecting a potential victim's environment, psycho-social stress, the extent to which people with mental health problems are seeking and receiving appropriate care, and the extent to which there is early identification and treatment of recurrent periods of depression.

Suicide - Issue Analysis

Table II-HS-8 indicates that Missouri's suicide rate from 1977 to 1979 is on the decline and is slightly below the rate for the United States, which is also declining during this period. All of the areas within the State are showing a similar decline except for Area III, which showed an increase from 1978 to 1979, although the 1979 rate still remains below the rate of 1977.

TABLE II-HS-8

SUICIDE
DEATH RATES PER 100,000 POPULATION
1977, 1978, 1979

Area	1977	1978	1979
U.S.	13.3	12.5	12.6
MISSOURI	13.1	12.2	11.8
AREA I	15.8	15.4	14.0
AREA II	12.1	11.3	10.9
AREA III	12.0	10.8	11.6
AREA IV	13.7	13.6	10.6
HSA V	14.0	12.1	11.7

Reference: 1, 3, 4, 5, 6, 7, 8, 9.

A recently completed detailed analysis of suicide rates in Missouri, conducted by the Missouri Center for Health Statistics (Missouri Monthly Vital Statistics, September, 1980) stated that the suicide rate for Missourians, throughout the 1970's closely paralleled that of the United States with neither rate showing a discernable upward or downward trend.

Suicide - Recommendations

In 1979, suicide was the tenth leading cause of death in Missouri (see data appendix Table A-HS-4); therefore, it represents a significant health status problem. The frequency of residence changes of a significant portion of the population, a high divorce rate, and high unemployment would all tend to cause an increase in the suicide rate, while the increased availability and accessibility of medical manpower and personal crisis intervention centers would help to reduce it.

Suicide - Goals

GOAL: BY 1985, THE COMPOSITE STATEWIDE SUICIDE RATE SHOULD BE REDUCED TO LESS THAN 10.6 DEATHS PER 100,000 POPULATION.

Homicide - Issue Identification

According to Saul in his book, The Hostile Mind,

Hostility is a disease to be cured and prevented like cancer, tuberculosis, or small pox . . . its cure will result in healthier, better living - not only for society in general, but for each individual in particular . . .

Despite the fact that homicide is not generally thought of as a medical problem, except in the Emergency Medical Service arena, it is one of the major killers, particularly among certain population cohorts. Multi-disciplinary strategies for its reduction must be planned for in the mental health, social services, and law enforcement networks.

Homicide - Issue Analysis

As Table II-HS-9 indicates, Missouri's homicide rate increased 19.2 percent from 1977 to 1978 and 20.4 percent over the two-year period from 1977 to 1979. The rate for the Nation in 1979 represents a 14 percent increase over that in 1977. Clearly the thirty percent increase in the homicide rate exhibited in Area III over this two-year interval is the main cause of the statewide increase. Area II is alone in showing a steady decline from 1977 to 1979.

TABLE II-HS-9

HOMICIDE
DEATH RATES PER 100,000 POPULATION
1977, 1978, 1979

Area	1977	1978	1979
U.S.	9.2	9.4	10.5
MISSOURI	9.8	10.7	11.8
AREA I	13.0	15.2	15.0
AREA II	4.3	3.2	2.9
AREA III	14.5	16.2	18.9
AREA IV	4.5	3.7	6.3
AREA V	5.3	7.1	5.9

Reference: 1, 3, 4, 5, 6, 7, 8, 9.

Homicide - Recommendations

With homicide mortality increasing, prevention strategies may lie in countering the social conditioning toward violence, improving living conditions and reducing stressful behavior, and in promoting handgun control. Because most homicides are shootings, the elimination of easy access to the handgun has been recognized as a deterrent to the rise of homicide.¹⁷ On a broader basis, societal changes (behavior modification, change in lifestyle and improved economic conditions) could eliminate the original hostility and prevent the underlying causes of homicide.

Homicide - Goals

GOAL: BY 1982, COMPOSITE STATEWIDE HOMICIDE RATES SHOULD NOT EXCEED THE 1978 STATEWIDE RATE OF 10.7 AND NO HEALTH SERVICE AREA SHOULD EXCEED A RATE OF 14.0 PER 100,000 POPULATION.

4. Socio-Emotional Disabilities

Negative Health Related Characteristics - Issue Identification

The number of felonious assaults and rapes can also be considered indicators of health status problems among the assailants and emotional shock to the victims. The victims normally require both medical and psychological treatment. Usually, non-medical interventions, including prevention programs, are of utmost importance in reducing these negative health characteristics. However, emergency medical care and psychological services should be available for those who have fallen victim to these crimes.

Health Related Characteristics - Issue Analysis

According to the State Highway Patrol, approximately 11,617 assaults and 1,450 rapes were reported in Missouri in 1979 and found to be actual offenses. This compares with 10,816 assaults and 1,260 rapes in 1978, and 10,570 assaults and 1,445 rapes in 1977. There is, however, great potential for the under-reporting of such crimes. These crimes share many characteristics with homicide, including a common origin in the expression of hostility.

Health Related Characteristics - Recommendations

Within the purview of health, there is a limit to the impact we can have on the occurrence of such crimes as assault and rape. A.R. Matthews, a lawyer and director of the Project on Mental Illness and Criminal Law of the American Bar Foundation, made the following comments on the relationship of criminals and the mentally ill:

Certainly there are differences between "criminals" and the "mentally ill," but it seems possible that the problems of mental illness and crime lend themselves to similar if not identical methods of handling. A wide spectrum of diagnostic and treatment facilities should be made available to the administrators of the criminal law to assist them in the related tasks of preventing crime and dealing effectively with persons legally convicted of criminal acts.

Health Related Characteristics - Goals

GOAL: THE INCIDENCE OF NEGATIVE HEALTH RELATED CHARACTERISTICS SHOULD NOT BE ALLOWED TO INCREASE.

Alcohol and Drug Abuse - Issue Identification

Alcohol and drug abuse are threatening to the health of Missourians. Health problems which can result from the use of alcohol include cirrhosis of the liver, lowered resistance to infectious disease, nutritional deprivation, and increased risk of certain cancers. Alcohol ingestion and/or abuse by pregnant women may result in damage to the unborn fetus and/or congenital disorders in the newborn, e.g., fetal alcohol syndrome. Drug abuse can arise both from the use of illicit drugs and the misuse of legally prescribed drugs. Much can be done through education to combat both alcohol and drug abuse problems.

Alcohol and Drug Abuse - Issue Analysis

By 1970 estimates, Missouri was ranked eighth in the Nation with respect to the prevalence of alcoholism. The total estimated number of alcoholics was 150,600.¹⁹ As can be seen by Table II-HS-10, incidence of alcoholism is higher in Missouri than in the U.S.; the ratio of men to women is similar.

TABLE II-HS-10

U.S. AND MISSOURI ALCOHOLISM RATE
PER 100,000 POPULATION
1970

Area	TOTAL	MALE	FEMALE
U.S.	4,200	7,300	1,300
MISSOURI	5,090	9,110	1,570

Reference: 11.

A study commissioned by the Missouri Department of Mental Health, Division of Alcohol and Drug Abuse, estimated the prevalence of severe alcohol and drug abuse at 300,845 persons in 1977 and 320,562 persons in 1978 (a 6.55 percent increase over the 1977 estimate).²⁰ If this rate of increase remains constant, there would be 341,559 substance abusers in 1979, 363,760 in 1980, and 387,404 in 1981. Alcohol abuse accounted for 84 percent of the substance abuse population estimated by this study, which represents 269,272 persons in 1978. Drug abuse accounted for 16 percent of the estimated substance abuse population, which represents 51,290 persons in 1978.

TABLE II-HS-11

CIRRHOSIS OF THE LIVER
DEATH RATES PER 100,000 POPULATION
1977, 1978, 1979

Area	1977	1978	1979
U.S.	14.3	13.8	13.6
MISSOURI	11.7	11.2	10.6
AREA I	11.5	12.9	12.6
AREA II	8.3	9.2	6.8
AREA III	14.9	12.1	12.5
AREA IV	8.3	9.3	10.1
AREA V	11.4	11.1	9.3

Reference: 1, 3, 4, 5, 6, 7, 8, 9.

The mortality rate in Missouri from cirrhosis of the liver is lower than that of the U.S. and, along with the U.S. rate, showed a steady decline from 1977 to 1979. Comparisons between cirrhosis death rates in Missouri and the U.S. will be examined by specific age cohorts later in this section.

Another indicator of the prevalence of alcohol abuse is the number of arrests for driving while intoxicated (DWI). There were 25,657 arrests in 1979 for driving while intoxicated according to the Missouri State Highway Patrol. This compares with 27,002 DWI arrests in 1978, and 25,121 in 1977.²¹

Alcohol and Drug Abuse - Recommendations

As emphasized earlier, efforts aimed at prevention, improving capabilities for attaining a better life style, and adequate treatment are necessary in Missouri in order to decrease the prevalence of substance abuse. The Department of Mental Health, Division of Alcohol and Drug Abuse projects that the rate of alcoholism per 100,000 population in 1984 will be 8,955.²² The extent of drug abuse and medication misuse, and the toll that they have taken in terms of overdose, addiction, crime, and change in the quality of life, are immeasurable. It has been extremely difficult to document the true extent of the drug and medication misuse problems. However, it is widely known that the problems are extensive and the factors are very real.

Alcohol and Drug Abuse - Goals

GOAL: BY 1985, THE ALCOHOLISM RATE IN MISSOURI SHOULD BE REDUCED TO 5 PERCENT LESS THAN DEPARTMENT OF MENTAL HEALTH PROJECTIONS FOR THAT YEAR.

Developmental Disabilities - Issue Identification

By taking positive steps in the areas where prevention is possible, and through continued research, Missouri may be able to reduce developmental disabilities. It is also important to give those developmentally disabled persons now present in Missouri the care and rehabilitative services they need for their optimum health status. Although most of the causes of developmental disabilities are unknown, steps can be taken to substantially reduce mental retardation.

Developmental Disabilities - Issue Analysis

The Missouri State Plan for Developmental Disabilities Services and Facility Construction Program for FY 1978 estimates that there were 252,080 developmentally disabled Missourians in 1978 and projects that there will be 274,581 by 1981. These estimates, limited to those persons substantially impaired, are broken down as follows:²³

TABLE II-HS-12

ESTIMATES OF DEVELOPMENTALLY DISABLED BY DISABILITY
FOR 1978 AND 1981

	1978	1981
Mentally Retarded	90,633	98,875
Cerebral Palsied	47,575	51,642
Epileptic (not in control through medication)	22,978	24,948
Autistic	255	261
Learning Disabilities	90,641	98,680

Reference: 15.

The Missouri Department of Mental Health Consolidated Plan for FY 81-83 estimates the total developmental disabilities population of the State in Fiscal Year 1981 to be 333,045 persons, or 6.86 percent of the population.²⁴ If this prevalence rate remains constant, there would be 345,802 persons affected by developmental disabilities by FY 1983. This edition of the Department of Mental Health Consolidated Plan also provides the following estimates of the percentage of the population affected by developmental disabilities by age group: 3 percent of the population less than four years of age; 1.87 percent of those between 5 and 19 years; 1.49 percent of adults 20 to 64 years; and 0.5 percent of the aged 65+ years of age.

The FY 78 Plan also notes that inner city areas plus certain rural counties have a very high proportion of developmentally disabled persons who are members of families below the established poverty levels. There are some rural counties where more than 70 percent of the developmentally disabled persons are eligible for aid under Title XX.²⁵

Developmental Disabilities - Recommendations

Research efforts to learn more about the causes of developmental disabilities are extremely important to their eventual reduction. Most of the causes of mental retardation, for example, are unknown; however, it is estimated that alcohol consumption is the greatest known cause of mental retardation.²⁶ Other known causative factors of developmental disabilities that are subject to prevention include: German measles, Rh incompatibility, prematurity, PKU, and syphilis.²⁷ Improvements in lifestyle, environment, and appropriate health care delivery can greatly improve the chances of yet unborn children.

Developmental Disabilities - Goals

Due to limitations in data and changes in estimation tools for prevalence of the developmentally disabled, a quantified goal for improved status will not be given at this time.

Mental Illness - Issue Identification

The President's Commission on Mental Health²⁸ suggested that at a minimum 15 percent of all Americans suffer from some mental disorder and that as many as 25 percent of all Americans may be in need of mental health services at any given time. In planning for the desired status, it is more realistic to think in terms of services to help patients improve their health status and quality of life through the control of their mental disturbance rather than decreasing prevalence. However, improvements in living and working environments, behavior modification and stress management are of great importance in reducing the prevalence of mental illness and dysfunction.

Mental Illness - Issue Analysis

The Missouri Department of Mental Health Consolidated Plan for Fiscal Years 1981 - 1983 estimates that "anywhere from 728,000 to 1,213,000 Missourians are in need of some form of mental health services."²⁹ A total of 108,768 persons received care by the Missouri Department of Mental Health in FY 79;³⁰ however, the number of Missourians who received care from private psychiatrists and psychologists is unknown. The 1981-1983 Mental Health Plan goes on to state:

Certain population characteristics and socio-economic factors have been shown to indicate groups of persons with a greater than average chance of becoming mentally disturbed. Hence, prevalence estimates have been adjusted upwards for those geographic areas where such high risk groups are concentrated. When applied to Missouri, socio-demographic need indicators pinpoint the Southeast and Southwest regions of the State and the inner city areas of Kansas City and St. Louis as most in need of mental health services.³¹

Table II-HS-13 identifies the areas of Missouri that are most in need of mental health care.

TABLE II-HS-13

HIGHEST NEED AREAS IN MISSOURI

St. Louis City	Carter County
Inner City Kansas City	Ripley County
Washington County	Wayne County
St. Francois County	Butler County
Dent County	Stoddard County
Crawford County	Scott County
Iron County	Mississippi County
Reynolds County	New Madrid County
Shannon County	Dunklin County
Oregon County	Pemiscot County

COUNTIES OF HIGH NEED
(AFTER INDICATORS ARE POPULATION-ADJUSTED)

Saline County	Moniteau County
Carroll County	Morgan County
Randolph County	Pettis County
Howard County	Camden County
Boone County	Laclede County
Cooper County	Wright County
Douglas County	Ozark County
Howell County	Texas County
Pulaski County	

Reference: 22.

Mental Illness - Recommendations

If progress can be made in each of the areas outlined in this section and the Department of Mental Health can meet its objective to better serve its needy areas, it would represent a significant step in the improvement of severe problem indicators, many of which represent needless suffering.

Mental Illness - Goals

Due to limitations in data and the present state of the art, a quantified goal for improved mental health status will not be given at this time.

II. MATERNAL AND CHILD HEALTH STATUS

1. Mortality

Two major indicators which relate to the health of mothers and children, infant and neonatal mortality, often correlate with socioeconomic, racial, educational, and marital factors.³²

Infant Mortality - Issue Identification

Infant mortality is a broad indicator of the health status of infants and mothers. An infant death is defined as one that occurs between birth and age 1. Sweden, in 1973, reported an infant mortality rate of 9.6 per 1,000 live births.³³ While it is known that most infant deaths are considered to be preventable, the Swedish figure has been used as an "irreducible" minimum within the context of previously described correlations. Missouri should pursue the long range goal of reaching this irreducible minimum and take special care to eliminate the evidently higher infant mortality of non-white infants (Figure II-HS-1 and Table II-HS-15).

Neonatal mortality is a subcategory of infant mortality. The neonatal period ranges from birth to the 28th day of life. Prenatal and neonatal care are very effective in reducing neonatal mortality since these deaths are oftentimes more amenable to direct medical interventions.³⁴

Infant Mortality - Issue Analysis

Infant mortality rates vary throughout the State (Tables II-HS-14 and II-HS-16). The overall statewide infant mortality rate has declined 25.1 percent since 1972; however, high mortality rates in Area I, parts of Area III, and Area V are of concern as are the overall non-white infant mortality rates. Maps A-HS-1 and A-HS-2 in the data appendix under Health Status depict rates for the United States.

TABLE II-HS-14

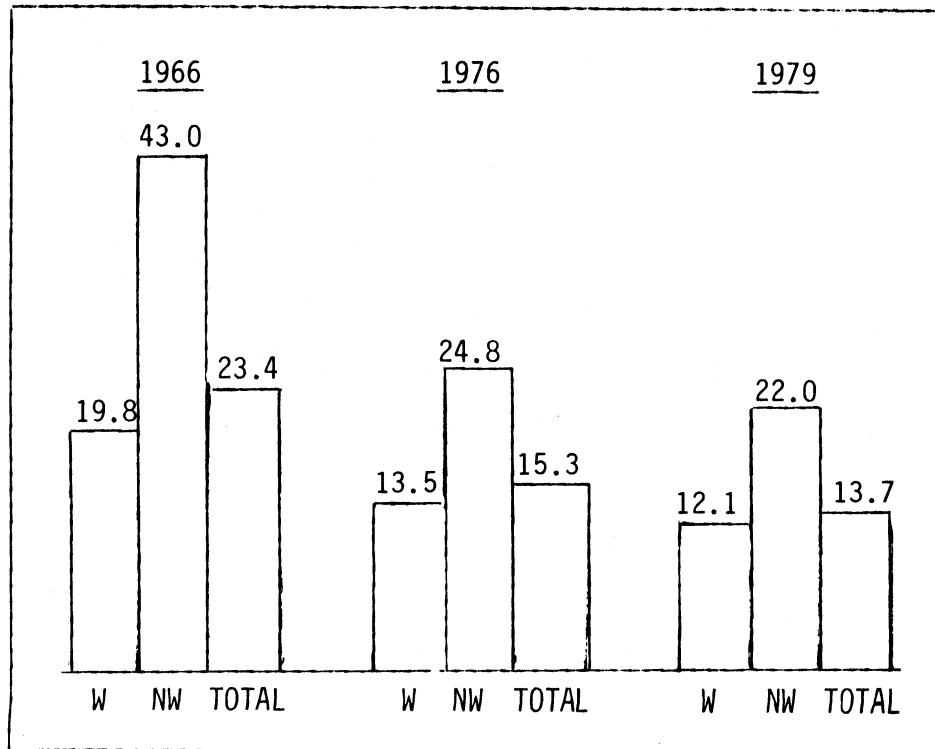
INFANT MORTALITY
RATE PER 1,000 LIVE BIRTHS
1972, 1977, 1978, 1979

Area	1972	1977	1978	1979
U.S.	18.5	14.1	13.8	13.0
MISSOURI	18.3	14.2	14.8	13.7
AREA I	16.4	17.1	20.2	15.9
AREA II	17.1	13.0	13.5	11.8
AREA III	18.6	13.5	14.1	13.8
AREA IV	18.3	13.9	12.5	13.0
AREA V	20.3	14.6	13.0	14.3

Reference: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

FIGURE II-HS-1

INFANT MORTALITY IN MISSOURI BY RACE



Reference: 5, 16.

TABLE II-HS-15

INFANT MORTALITY BY RACE
RATE PER 1,000 LIVE BIRTHS
UNITED STATES AND MISSOURI
1977, 1978, 1979

Area	1977		1978		1979	
	White	Nonwhite	White	Nonwhite	White	Nonwhite
U.S.	12.3	21.7	12.0	21.1	N/A	N/A
MISSOURI	12.4	23.7	12.2	28.1	12.1	22.0

Reference: 3, 4, 5, 7, 8, 9.

TABLE II-HS-16

NEONATAL MORTALITY
RATE PER 1,000 LIVE BIRTHS
1975, 1979

Area	1975	1979
U.S.	11.6	8.7
MISSOURI	11.4	9.5
AREA I	10.4	11.3
AREA II	13.7	8.0
AREA III	11.8	9.9
AREA IV	13.0	9.4
AREA V	14.2	8.3

Reference: 5, 6.

Infant Mortality - Recommendations

A large gap still remains between the 1979 Missouri infant mortality rate and the irreducible minimum. However, significant progress has been made since 1972 when the rate was 18.3 per 1,000 live births.

In attempting to reduce infant mortality, emphasis should be placed upon these population groups and areas with high mortality, emphasizing the use of prenatal care early in pregnancy and the referral of high risk deliveries to appropriate hospitals. Significantly, those areas of the State that exhibit favorable conditions, e.g., high socioeconomic status, relative to maternal and child health status follow much more closely the National and State trends of lowered infant and neonatal mortality. Correspondingly, those areas that exhibit unfavorable conditions also exhibit a low maternal and child health status. For further discussion, See Chapter III, Maternal and Child Health Services.

Infant Mortality - Goals

GOAL: BY 1985, THE MISSOURI INFANT MORTALITY RATE SHOULD BE REDUCED FROM THE PRESENT RATE OF 13.7 TO 11.5 PER 1,000 LIVE BIRTHS WITH NO POPULATION SUB-GROUPS EXCEEDING 17 PER 1,000 LIVE BIRTHS.

GOAL: BY 1985, THE MISSOURI NEONATAL DEATH RATE SHOULD BE REDUCED FROM THE 1979 RATE OF 9.5 TO 7.9 PER 1,000 LIVE BIRTHS WITH NO HEALTH SERVICE AREA EXCEEDING 9.0 DEATHS PER 1,000 LIVE BIRTHS.*

Fetal Mortality - Issue Identification

A fetal death is one which occurs between 20 weeks gestation and birth. These deaths directly correlate with maternal lifestyle and environmental factors. Many of these deaths could be avoided by efforts aimed at improving the health of mothers.³⁵

Fetal Mortality - Issue Analysis

Missouri's fetal mortality rate in 1972 was 12.1 deaths per 1,000 live births. This rate has been reduced to 9.1 deaths per 1,000 live births in 1979. There has been evident progress in improving the health of mothers and unborn fetuses, and the considerable variation in fetal mortality among geographic areas in the State has been significantly reduced. Overall, Missouri has made considerable progress in reducing the rate for fetal deaths.

*These are equivalent reductions that occurred from 1975 to 1979.

TABLE II-HS-17

FETAL MORTALITY
RATE PER 1,000 LIVE BIRTHS
1972, 1976, 1977, 1978, 1979

Area	1972	1976	1977	1978	1979
MISSOURI	12.1	10.9	10.3	9.9	9.1
AREA I	13.7	13.5	11.0	9.9	9.8
AREA II	12.6	11.2	10.5	9.7	9.5
AREA III	11.8	10.2	9.3	8.5	8.7
AREA IV	10.5	8.9	11.7	9.8	8.8
AREA V	11.9	12.0	10.0	14.2	9.0

Reference: 2, 3, 4, 5, 6.

Fetal Mortality - Recommendations

Reduction in fetal mortality and improvement in the health of mothers is evidenced by the improving rate of fetal deaths. However, the variation in fetal mortality rates statewide is consistent with the variation in infant mortality rates as indicated by the higher rates in Area I, parts of Area III, and Area V. The correlation of socioeconomic status and race with fetal mortality is evidenced by the high fetal mortality rates in the predominantly poor and non-white inner cities of St. Louis and Kansas City and the rural poor in the Southeast Missouri Bootheel.

Fetal Mortality - Goals

GOAL: BY 1985, THE MISSOURI FETAL MORTALITY RATE SHOULD BE REDUCED FROM THE PRESENT RATE OF 9.1 TO 8.7 DEATHS PER 1,000 LIVE BIRTHS WITH NO HEALTH SERVICE AREA EXCEEDING 9.0 DEATHS PER 1,000 LIVE BIRTHS.

2. Morbidity

Childhood Diseases - Issue Identification

Measles

Although measles (rubeola) is largely a childhood disease, infection at any age is possible. In Missouri, mass immunization began in 1966. Historically, the incidence of measles reaches a peak incidence every 3 or 4 years. Immunization has altered that pattern, resulting in less frequent epidemics of much smaller proportions. Measles is a dangerous disease, sometimes leading to encephalitis, mental retardation, pneumonia, and eye damage. Normally, 6 per 1,000 identified cases of measles require hospitalization and 1 in 1,000 cases leads to encephalitis. Persons in the 1 through 5 age group are most at risk of such complications. Due to the seriousness of this disease, Missouri should ultimately decrease its incidence to a few isolated cases.

Rubella

Rubella is better known as German Measles. Normally, it is a relatively mild communicable disease; however, when it is acquired by a woman during the first four months of pregnancy, rubella can lead to infection of the fetus, resulting in congenital abnormalities of the child.

Adults are just as likely to contract German Measles as they are regular measles in the State of Missouri, nevertheless, as can be seen from Table II-HS-18, less than one-third of the reported rubella cases in 1979 and 1980 were above ten years of age. Clearly two-thirds of the reported rubella in Missouri is occurring in young children.

Vaccines for the³⁶ rubella virus were first licensed in the U.S. in the summer of 1969. In 1970, the State of Missouri launched a mass immunization program aimed at increasing the general level of immunity in the State in order to minimize exposure to pregnant women. For the protection of pregnant women, it is desired to lower the incidence of rubella to less than 10 isolated cases annually.

TABLE II-HS-18

REPORTED CASES OF RUBELLA AND PERCENTAGE BY AGE
1979 AND 1980
MISSOURI

AGE	1979		1980	
	NO.	PERCENT	NO.	PERCENT
1	10	17.5	3	11.5
1 - 4	19	33.3	5	19.2
5 - 9	9	15.8	11	42.3
10-14	6	10.5	4	15.4
15-19	6	10.5	3	11.5
20+	7	12.3	0	00.0
TOTAL	57	100.0%	26	100.0%

Reference: 17.

Mumps

This communicable disease is normally manifested as a localized swelling of one or more salivary glands, but it can affect other areas of the body such as the testes in the male. Severe mumps contracted by males can cause sterility. Complications are more often found where mumps have been acquired by teenagers and adults rather than by children. Presently there is no mass immunization program for mumps in Missouri. It is estimated³⁷ that 30 percent of children are immunized without record for mumps. Both the U.S. Public Health Service and the American Academy of Pediatrics recommend vaccination for mumps among children one year of age and older who have not been previously affected. Prepubertal males in particular should be vaccinated.

It is desired that the annual incidence of mumps should be reduced to less than 50 cases.

Other Diseases for Which Immunization is Mandated

Immunization must be provided for protection against diphtheria, tetanus, pertussis (whooping cough), and polio. The incidence of these diseases in Missouri should be maintained at as low a level as possible due to their severe manifestations.

Childhood Diseases - Issue AnalysisMeasles

In 1977, there was an epidemic of measles in Missouri when 1,055 cases were reported. Outbreaks occurred in 20 counties including the metropolitan areas. By comparison, 436 measles cases were reported during 1979, while in 1978, there were 154 cases.

	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
NO. OF CASES	436	154	1055	468	251	268	56	221	2630	1275

Reference: 17.

Rubella

	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
NO. OF CASES	73	118	93	139	758	180	210	500	1546	571

Reference: 17.

In 1970, the year immunization was begun, there were 571 cases of rubella. In 1979, there were 73 cases of rubella in the State.

Mumps

In 1977, some epidemic outbreaks of mumps occurred in the metropolitan areas of Missouri and the rural areas of Southeast Missouri. The total number of cases in the State in 1977 was 2,421. There were 203 cases in 1979, which is a record low for this decade.

	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
NO. OF CASES	203	1211	2421	962	1027	1755	637	854	1165	521

Reference: 17.

Other Diseases for Which Immunization is Mandated

	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
Pertussis	24	45	31	19	21	25	10	145	20	27
Tetanus	1	2	4	2	2	7	7	5	2	2
Diphtheria	1	1	1	1	0	0	0	0	0	0
Polio	1	0	0	0	0	0	0	0	0	1

Reference: 17.

Childhood Diseases - Recommendations

Prevention and Detection Services in Chapter III includes a discussion of immunization against childhood diseases.

Measles

The importance of an aggressive immunization program cannot be overestimated. In the years 1970 and 1971, due to federal cutbacks, fewer measles vaccinations were administered. There was, subsequently, a dramatic rise in the incidence of measles in Missouri from 23 cases in 1969 to 2,630 cases in 1971.³⁸

Rubella

Due to the devastating effect that this disease can have on fetal development (e.g., mental retardation, blindness, and hearing loss), incidence should be kept low and an aggressive immunization policy adhered to.

Mumps

Because of the dangerous side effects of this disease, the Prevention and Detection Services section of this State Health Plan includes a recommended action that immunization against mumps be mandated by law. Presently, an estimate of the proportion of children who are immunized without record against mumps is 50 percent.

Other Diseases for Which Immunization is Mandated

State immunization efforts have strengthened immunization requirements in the schools and have focused extensively on pre-school children. The relative low incidence of diphtheria, tetanus, and polio, with the possible exception of pertussis, must not lead to a relaxation of immunization efforts. Due to the seriousness of these diseases, it is evident that protection through immunization must be mandated.

Childhood Diseases - Goals

In light of the considerable year to year fluctuation in the reported incidence of these diseases, it is not realistic to set a quantified goal level regarding annual incidence.

GOAL: BY MEANS OF INCREASED IMMUNIZATION EFFORTS, TO REDUCE THE NUMBER OF PEOPLE SUSCEPTIBLE TO THESE DISEASES TO THE ABSOLUTE MINIMUM.

GOAL: TO REDUCE THE INCIDENCE AND PREVALENCE OF THESE COMMUNICABLE DISEASES IN MISSOURI TO THE LOWEST POSSIBLE LEVEL.

Dental Health - Issue Identification

In order to ensure good dental health, dental prophylaxis for Missouri's youngsters is an important component of their overall health care. It is desired that children see a dentist at least annually for regular dental care.

Dental Health - Issue Analysis

Table A-HS-12 in the data appendix under Health Status indicates that only 40 percent of Missourians under age 17 visited a dentist annually for regular dental care from 1974 through 1976. This figure is 5.4 percentage points less than the overall percentage in the North Central Region.

Dental Health - Recommendations

The low percentage of children receiving annual dental exams suggests that the dental health status of Missouri youngsters is less than optimal. Dental prophylaxis, in the form of an annual visit, is of key importance to the dental health of young people.

Dental Health - Goals

Due to data limitations, no goals will be presented at this time.

3. Socio-Emotional Disorders

Child Abuse and Neglect - Issue Identification

The problem of child abuse is not limited to any socio-economic group; however, there are some general characteristics of the battered child syndrome. Usually, the child is rejected, and is the offspring of a parent who had also been rejected. Family situations leading to abuse might be the result of too many children in the family and poor marital adjustment (sometimes the result of a forced marriage). Frequently the perpetrator of the abuse or neglect and significant others are in need of counseling and/or therapy in order to prevent future recurrence once abuse has been identified. Socio-economic frustrations may also exist in the household.³⁹ Root causes of the problem require further study. However, based upon what is now known and the availability of programs such as the Division of Family Services Hotline, the occurrence of this syndrome must be reduced.

Child Abuse and Neglect - Issue Analysis

The Division of Family Services received 17,489 reports of child abuse and neglect between January and December, 1977. The total number of children abused or neglected as reported was 34,219.⁴⁰ However, this problem is considered vastly underreported. In 1978 and 1979, 11,608 and 26,358 reports were received, affecting 26,358 and 48,412 children respectively.

Child Abuse and Neglect - Recommendations

The term "abuse" can mean physical, sexual, or emotional abuse. The term "neglect" can mean educational, medical, or physical neglect. Certainly, socio-economic and parental education levels play a role in the incidence of abuse and neglect. Utilization of mental health services and comprehensive support services for families and children could significantly reduce the prevalence of this problem (see Maternal and Child Health in Chapter III under Diagnosis and Treatment Services). One important step in assisting parents and children in resolving these problems would be to train key persons such as doctors, teachers, social workers, and health officials to identify abuse and neglect and make appropriate referrals.

Child Abuse and Neglect - Goals

GOAL: INCREASE THE ACCURACY AND QUANTITY OF REPORTS OF CHILD ABUSE AND NEGLECT.

GOAL: BY 1985, THE NUMBER OF ABUSED AND NEGLECTED CHILDREN SHOULD BE REDUCED TO A MINIMUM.

III. ADOLESCENT THROUGH MIDDLE LIFE HEALTH STATUS

1. MortalityMajor Cause of Death - Issue Identification

Cancer, heart disease, cerebrovascular disease, and accidents are all responsible for unnecessary deaths. One method utilized to assess the impact of these unnecessary deaths is to estimate the amount of money that might have been earned by those dying prematurely. Using this approach, cardiovascular disease (both heart disease and cerebrovascular disease) accounts for 35 percent of the cost of mortality.⁴¹ These figures were computed by the Department of HEW in "Papers on the National Health Guideline: Baselines for Setting Health Goals and Standards" and reflect National statistics. It is our long-range goal to minimize mortality as much as intervention will allow.

Major Cause of Death - Issue Analysis

TABLE II-HS-19

HEART DISEASE, CANCER, AN CEREBROVASCULAR DISEASE
AGE SPECIFIC DEATH RATES FOR MISSOURI AND THE U.S.
AGE AND SEX SPECIFIC RATES FOR MISSOURI
1977 AND 1979

AGE GROUP	HEART DISEASE		CANCER		CEREBROVASCULAR DISEASE	
	1977	1979	1977	1979	1977	1979
35-44 Missouri Males	71.0	66.0	54.5	46.7	9.2	8.9
35-44 Missouri Females	21.8	20.3	55.0	56.1	8.2	7.2
35-44 Missouri Total	45.6	42.4	54.8	51.6	8.7	8.0
35-44 U.S. Total	47.5	46.4	51.5	49.3	9.7	9.3
45-54 Missouri Males	305.6	267.7	201.4	205.5	37.5	27.7
45-54 Missouri Females	87.2	76.9	170.5	182.9	26.8	23.7
45-54 Missouri Total	191.9	167.9	185.3	193.7	31.9	25.6
45-54 U.S. Total	190.2	183.0	182.0	182.9	28.9	27.4
55-64 Missouri Males	793.8	722.8	522.4	573.3	104.9	85.8
55-64 Missouri Females	259.7	254.5	359.5	349.7	60.6	61.4
55-64 Missouri Total	505.7	469.9	434.5	452.5	81.0	72.6
55-64 U.S. Total	532.2	514.4	438.4	442.1	78.5	68.7

Reference: 1, 3, 5, 6, 7, 9.

Between 1977 and 1979, the 45-54 age group in Missouri experienced a decrease in heart disease mortality (Table II-HS-19). All the middle life age groups experienced a reduction in mortality due to heart disease, however, the rate for males aged 45-54 decreased by 12.4 percent and the rate for females of this age group decreased 11.8 percent. This resulted in a total reduction in the rate for this age group 45-54 of 12.5 percent.

The rate of cancer mortality for males in the age group 35-44 decreased 14.3 percent and the rate for females in the 55-64 age group decreased by 2.7 percent for 1977 to 1979. All the remaining mortality rates for cancer in the middle-life age groups increased, the largest being a 9.7 increase in the rate for 55-64 year old males.

For cerebrovascular disease, the mortality rates decreased in all age groups from 1977 to 1979, the largest decline, 18.2 percent, taking place for males in the age group 55-64.

Major Cause of Death - Recommendations

There appears to be no major discrepancies between Missouri and U.S. death rates. Of the most interest concerning these statistics are the differences between men and women. For heart disease, the male death rates are twice the female rates and for some age groups are more than three times as high. For cerebrovascular disease, the male rates are higher and the margin of difference increases with advancing age. For cancer, the death rates for women are higher than those for males for the age group 35-44, but for those aged 45-64 the rates for males leads by a substantial margin. Prevention strategies relating to these three leading causes of death including the following: (1) the detection and treatment of high blood pressure, diabetes, and high blood cholesterol; (2) reducing the level of tobacco smoking in the population; (3) reducing the level of alcohol abuse in the population; (4) improving the dietary practices and exercise habits of the population; and (5) reducing the number and level of carcinogens in the environment.

Major Causes of Death - Goals

GOAL: BY 1985, MORTALITY RATES DUE TO HEART DISEASE AND CEREBRO-VASCULAR DISEASE SHOULD BE REDUCED BY 5 PERCENT AND THE MORTALITY RATES DUE TO CANCER SHOULD NOT INCREASE BEYOND THEIR PRESENT LEVELS.

2. Morbidity

Venereal Disease - Issue Identification

Venereal disease represents one of the major public health problems in Missouri today. Gonorrhea ranks as the most prevalent venereal disease and is one of the most common bacterial infections among adults in the U.S. Nationally, it has been estimated that nearly 25 percent of all cases of gonorrhea affect teenagers.⁴² In Missouri in 1979, 27.5 percent of the 22,954 reported cases of gonorrhea were in persons nineteen years of age and under (see data appendix Table A-HS-7). It is absolutely necessary to reduce the pool of infected persons in order to curtail the spread of venereal disease.

Venereal Disease - Issue Analysis

TABLE II-HS-20

VENEREAL DISEASE CASES PER 100,000
1977 AND 1978

	GONORRHEA		SYPHILLIS	
	1977	1978	1977	1978
Missouri Total	443.2	472.3	36.2	32.7
United States	466.8	468.3	20.1	30.0
St. Louis	1755.9	1831.2	147.0	119.3
Kansas City	1300.4	1671.0	86.3	94.5
U.S. Cities*	926.3	942.7	67.7	68.7

*Cities with 200,000 or more population in 1970.

Reference: 12.

In 1970, there were 310 cases of gonorrhea per 100,000 population in Missouri. This has increased significantly to 443.2 in 1977 and to 472.3 in 1978. The urban areas of Missouri show a tremendously greater rate, being nearly four times that of the total State.

The incidence of syphilis in Missouri has decreased from 36.2 cases per 100,000 population in 1977 to 32.7 cases in 1978. The differences between the urban areas and the rest of the State remain significant, and while the rate of syphilis in St. Louis declined from 1977 to 1978, as did the State rate, the rate of syphilis in Kansas City increased in 1978 from 1977.

Venereal Disease - Recommendations

Over the past nine years, the gonorrhea incidence rate has increased by approximately 68 percent. Because of the asymptomatic nature of gonorrhea in females, incidence among this sex may go undiagnosed and unreported and result in serious complications, e.g., sterility. Asymptomatic females may also serve as reservoirs for further infection. The short incubation period of the disease results in rapid spread and contributes to the rise in incidence. Further compounding the problem of control is the fact that new strains of gonorrhea are more drug resistant, hampering treatment and control.⁴³

Although syphilis is a communicable disease, it is rarely transmitted after a period of two years. However, in its later stages, syphilis is a serious threat to the health of the carrier. Control of syphilis is a task that requires tracing and treating cases of two years or less in duration. There is an average 21 day incubation period for syphilis. Through proper investigation of contacts within this 21-day period, much can be done to curtail the transmission of syphilis.⁴⁴ Missouri has seen a decline in the incidence of syphilis, due in large part to the success of control programs.

General strategies for further improvement include health and sex education, premarital and prenatal periodic examinations, provision of adequate facilities for early diagnosis and treatment and the continuance of case-finding activities by the Missouri Division of Health and local health departments. Particular focus should be given to the metropolitan areas, where the rates are extremely high.

Venereal Disease - Goals

GOAL: BY 1985, THE STATEWIDE INCIDENCE RATE FOR GONORRHEA SHOULD NOT EXCEED THE PRESENT RATE OF 472.3 CASES PER 100,000 POPULATION.

GOAL: BY 1985, THE STATEWIDE INCIDENCE RATE FOR SYPHILLIS SHOULD NOT EXCEED 29.5 CASES PER 100,000 POPULATION.

Limitation in Activity Due to Chronic Conditions - Issue Identification

In middle life, many persons become limited in activity due to chronic conditions, even though prevention efforts might have postponed or eliminated the debilitating effects. It is known, however, that physical limitations can be reduced by prevention efforts aimed at young people, today. Emphasis should also be placed on therapy for those persons presently faced with limitations who could be brought to their optimum functioning level.

Limitation in Activity Due to Chronic Conditions - Issue Analysis

In Missouri, among those 45-64 years of age, there is a slightly greater percentage of people limited in activity compared to the U.S. or the North Central Region as Table A-HS-13 in the data appendix illustrates. Five percent of the 45-64 age group in Missouri are unable to carry on major activity. These limitations are a result of chronic conditions such as cardiovascular disease and arthritis. Twenty-five percent of this population group are limited in activity.

Limitation in Activity Due to Chronic Conditions - Recommendations

Fortunately, Missouri does not have a significant percentage of persons who are unable to carry on major activities. However, Missouri does have a high percentage of persons who are limited in the amount or kind of major activity. For those persons in the 45-64 age group, who are members of the working population, reaching an optimal functional level is of significant importance.

3. Accidental Death and Injury and Violent Death

Accidental Deaths - Issue Identification

For the age groups 15-24 years and 25-34 years, accidents are the leading cause of death. Young males, for example, are more at risk of death from a motor vehicle accident than the general population. It is desired to substantially reduce these untimely and usually preventable accidental deaths.

Accidental Deaths - Issue Analysis

TABLE II-HS-21

ACCIDENTAL DEATHS AND MOTOR VEHICLE ACCIDENTAL DEATHS
AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI & THE U.S.
AGE AND SEX SPECIFIC RATES PER 100,000 FOR MISSOURI
AGE GROUP 15-24 YEARS
1977 AND 1979

AGE GROUP	TOTAL ACCIDENTS		MOTOR VEHICLE ACCIDENTS	
	1977	1979	1977	1979
15-24 Missouri Males	97.5	99.0	69.6	68.8
15-24 Missouri Females	26.7	28.8	22.9	24.3
15-24 Missouri Total	62.6	64.5	46.5	46.9
15-24 U.S. Total	64.7	63.8	44.6	46.4

Reference: 1, 3, 5, 6, 7, 9.

TABLE II-HS-22

ACCIDENTAL DEATHS
 AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI & THE U.S.
 AGE AND SEX SPECIFIC RATES PER 100,000 FOR MISSOURI
 1977 AND 1979

AGE GROUP	ACCIDENTS	
	1977	1979
25-34 Missouri Males	74.4	67.3
25-34 Missouri Females	16.2	15.7
25-34 Missouri Total	44.4	40.4
25-34 U.S. Total	45.9	47.0
35-44 Missouri Males	51.3	52.5
35-44 Missouri Females	13.5	17.0
35-44 Missouri Total	32.6	34.2
35-44 U.S. Total	36.6	37.1
45-54 Missouri Males	70.0	57.5
45-54 Missouri Females	19.5	17.5
45-54 Missouri Total	43.7	36.6
45-54 U.S. Total	41.1	38.1
55-64 Missouri Males	69.1	59.4
55-64 Missouri Females	22.8	22.5
55-64 Missouri Total	44.1	39.5
55-64 U.S. Total	46.3	44.9

Reference: 1, 3, 5, 6, 7, 9.

As the tables depict, motor vehicle accident death rates and total accident death rates for both sexes is highest among 15-24 year olds. In 1979, 25.6 percent of all accidental deaths and 37.2 percent of all motor vehicle deaths occurred to persons in the 15-24 age group.

Accidental Death and Injury and Violent Death - Recommendations

The motor vehicle mortality rate for 15-24 year old males decreased slightly from 1977 to 1979 while the total accidental death rate for this cohort increased. In the 25-34 age group, the accidental death rate for males decreased 9.7 percent from 1977 to 1979 and the female rate dropped 3.1 percent. During this two-year period, the death rates due to accidents increased in the age group of 35-44 years for both males and females (26 percent for females), and decreased for both males and females in the 45-54 and 55-64 age groups.

Due to the particularly untimely and preventable nature of the deaths that these statistics indicate, they are of particular importance. Noteworthy are the consistently high male mortality rates, with the greatest difference being in the age range of 24-35. Prevention strategies aimed toward reducing automobile fatalities are of particular importance. Of those strategies, emphasis should be placed on the driver who is impaired due to alcohol or drug use.

Accidental Death and Injury and Violent Death - Goals

GOAL: BY 1985, THE MORTALITY RATE DUE TO ACCIDENTAL DEATH FOR MALES 15-24 SHOULD BE REDUCED BY 10 PERCENT.

GOAL: BY 1985, THE MISSOURI ACCIDENT DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY 5 PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

Suicide - Issue Identification

Suicide represents the third leading cause of death in both the 15-24 year old age group and the 25-34 year old age group (see data appendix Table A-HS-5). In 1979, deaths due to suicide accounted for 9.5 percent of the total number of deaths in the age group 15-24 and 12.7 percent of the total number of deaths in the 25-34 year old age group.

Suicide - Issue Analysis

Table II-HS-23 indicates that Missouri's suicide rates closely correlate with U.S. figures in both 1977 and 1979. Noteworthy is the fact that mortality rates for males are consistently higher than rates for females.

Age specific death rates due to suicide are lowest among the 15-24 year olds and highest among the 55-64 year olds. Among women, the peak rate is in the age group 45-54 while for men it is 55-64. Also noteworthy are the age groups where the male rate is several times the female rate. In the 25-34 year old group, the male rate is over four times the rate for females.

TABLE II-HS-23

SUICIDE AND HOMICIDE
AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI & THE U.S.
AGE AND SEX SPECIFIC RATES PER 100,000 POPULATION FOR MISSOURI
1977 AND 1979

AGE GROUP	SUICIDE		HOMICIDE	
	1977	1979	1977	1979
15-24 Missouri Males	19.8	18.3	24.6	31.3
15-24 Missouri Females	3.8	5.1	9.6	9.4
15-24 Missouri Total	11.9	11.8	17.2	20.5
15-24 U.S. Total	13.1	12.1	13.1	15.5
25-34 Missouri Males	26.7	26.6	24.7	37.9
25-34 Missouri Females	9.3	5.8	6.0	5.3
25-34 Missouri Total	17.7	15.7	15.0	20.9
25-34 U.S. Total	17.8	17.6	17.1	19.4
35-44 Missouri Males	22.4	19.3	23.6	25.9
35-44 Missouri Females	12.0	8.7	5.2	5.4
35-44 Missouri Total	17.0	13.8	14.1	15.3
35-44 U.S. Total	16.5	14.2	16.0	13.7
45-54 Missouri Males	25.0	23.0	13.7	21.7
45-54 Missouri Females	14.9	9.3	4.9	2.3
45-54 Missouri Total	19.7	15.8	9.1	11.6
45-54 U.S. Total	19.1	17.6	10.7	10.9
55-64 Missouri Males	34.3	28.8	11.4	11.8
55-64 Missouri Females	9.3	8.8	4.0	1.2
55-64 Missouri Total	20.8	18.0	7.4	6.1
55-64 U.S. Total	18.4	18.8	8.2	7.0

Reference: 1, 3, 5, 6, 7, 9.

Suicide - Recommendations

As mentioned earlier in the general discussion of suicide, correlations have been found between certain socio-demographic characteristics and the occurrence of suicide. Eventual reduction may be achieved by directing remedial efforts and intervention techniques toward such circumstances and populations particularly at risk.

Suicide - Goals

GOAL: BY 1985, THE MISSOURI SUICIDE DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY 5 PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

Homicide - Issue Identification

Among young males, the death rate for homicide exceeds the rate for the general population. This is a target group for which homicides must be drastically reduced.

Homicide - Issue Analysis

Table II-HS-23 illustrates homicide rates. It is noteworthy that for the youngest age group, 15-24, the Missouri rate exceeds the U.S. rate. For the older age groups, the rate in Missouri is comparable with that for the U.S.

Homicide - Recommendations

This data supports the common belief that homicides occur more often among young men. In Missouri, the rate among the 15-24 year olds is particularly excessive.

Among males, the homicide rates increased for each age group from 1977 to 1979, with particularly large jumps in the age group 15-24 (+27 percent), 25-34 (+53 percent), and 45-54 (+58 percent). Mortality due to homicide also varies greatly by geographic area, with the major metropolitan areas exhibiting the highest mortality.

Homicide - Goals

GOAL: BY 1985, THE HOMICIDE DEATH RATE SHOULD BE REDUCED OVER ALL AGE GROUPS WITH PARTICULAR EMPHASIS ON REDUCTION OF THE DEATH RATE AMONG THOSE 15-34 YEARS.

4. Socio-Emotional DisordersAlcoholism - Issue Identification

As mentioned earlier, Missouri ranks eighth in the Nation with regard to the incidence of alcoholism. There is a very strong link between alcoholism and cirrhosis of the liver. Comparing Missouri's death rate for cirrhosis of the liver in middle life to that of the Nation can be a surrogate indicator of the severity of the problem of alcoholism in Missouri. It is thought to be feasible to reduce the death rate by one-third.

Alcoholism - Issue Analysis

TABLE II-HS-24

CIRRHOSIS OF THE LIVER
AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI & THE U.S.
AGE AND SEX SPECIFIC RATES PER 100,000 FOR MISSOURI
1977 AND 1979

AGE GROUP	CIRRHOSIS OF THE LIVER	
	1977	1979
35-44 Missouri Males	17.6	12.4
35-44 Missouri Females	5.6	6.2
35-44 Missouri Total	11.4	9.2
35-44 U.S. Total	15.6	14.8
45-54 Missouri Males	42.1	29.0
45-54 Missouri Females	22.2	10.1
45-54 Missouri Total	31.7	19.1
45-54 U.S. Total	33.6	31.3
55-64 Missouri Males	52.4	48.1
55-64 Missouri Females	14.6	25.3
55-64 Missouri Total	32.0	35.8
55-64 U.S. Total	46.8	40.7

Reference: 1, 3, 5, 6, 7, 9.

Although data compiled in 1970 indicates that Missouri ranked 8th in the Nation for alcoholism, mortality rates in 1979 for cirrhosis of the liver are clearly less than U.S. figures. This does not necessarily refute the ranking, however, the age specific mortality rates of liver disease and cirrhosis have all declined for the total populations in these age groups.

Alcoholism - Recommendations

Even though mortality due to liver damage does not exceed U.S. rates, it warrants intervention because of the preventable nature of the illness. Mortality for 55-64 year old females jumped 73.3 percent from 1977 to 1979.

Alcoholism - Goals

GOAL: BY 1985, THE DEATH RATE DUE TO CIRRHOSIS OF THE LIVER SHOULD BE REDUCED BY A MINIMUM OF 5 PERCENT WITHIN EACH AGE GROUP IN MIDDLE LIFE.

IV. HEALTH STATUS OF THE AGED

1. Mortality

Major Causes of Death - Issue Identification

Just over thirteen percent of Missouri's population is now 65 and over. The development of modern sanitation and water systems, safer food, plus improved medical intervention have reduced the morbidity and mortality resulting from infectious diseases and have extended the average life expectancy at birth. The increase in numbers of people reaching old age has led to a higher prevalence of chronic disease.⁴⁵ For cardiovascular disease and cancer the single most important predisposing factor is old age. Nevertheless, interventions can be made to make life as long and as disability-free as is medically feasible. Improving health status by promoting independence, productivity, and longevity in older Missourians should be a very important goal of the health care system. Mortality among the 65+ population should compare favorably to U.S. mortality rates for this age group. Largely preventable deaths including pneumonia/influenza and accidents should be reduced to the minimums.

Major Causes of Death - Issue Analysis

Comparing mortality in Missouri and the U.S. from Table II-HS-25, death rates for all the causes of death except accidental death (discussed separately) are consistently higher for Missouri in the 65-74 age group and the 85+ age group, whereas for the 75-84 age group, Missouri's death rates are consistently lower for all the causes. One might question whether there is an error in the population projection of the number of Missourians in the 75-84 year old group. However, an examination of overall death rates since 1975 shows that these trends have been consistent. For presently unknown reasons, the 75-84 year old cohort appears to be exceptional.

From 1977 to 1979, almost all the Missouri mortality rates for these age groups are decreasing, with the exception of the pneumonia/influenza rates in the 85+ age group and the cancer mortality rate in the 65-84 age group.

TABLE II-HS-25

HEART DISEASE, CEREBROVASCULAR DISEASE, CANCER, AND PNEUMONIA/INFLUENZA
AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI AND THE U.S.
AGE AND SEX SPECIFIC RATES PER 100,000 FOR MISSOURI
1977 AND 1979

AGE GROUP	HEART DISEASE		CANCER		CEREBROVASCULAR DISEASE		PNEUMONIA/INFLUENZA	
	1977	1979	1977	1979	1977	1979	1977	1979
65-74 Missouri Males	1899.3	1757.5	1116.2	1178.4	364.2	298.4	96.2	74.9
65-74 Missouri Females	855.8	782.2	563.6	576.6	258.1	204.6	44.0	34.9
65-74 Missouri Total	1298.7	1197.8	798.2	833.1	303.1	244.6	66.1	51.9
65-74 U.S. Total	1255.6	1206.6	794.5	797.5	260.6	228.7	60.4	46.8
75-84 Missouri Males	3878.2	3520.0	1744.1	1674.8	1053.9	903.2	323.6	259.4
75-84 Missouri Females	2511.4	2338.5	824.3	847.1	942.8	755.8	170.7	140.4
75-84 Missouri Total	3019.0	2783.7	1165.8	1159.0	984.0	811.4	227.5	185.2
75-84 U.S. Total	3201.9	3151.3	1270.8	1300.1	987.1	858.5	233.9	198.0
85+ Missouri Males	8508.3	7459.6	2150.8	2070.7	2770.9	2106.1	910.6	934.3
85+ Missouri Females	7359.4	7393.5	1227.0	1215.5	2662.1	2453.6	635.1	644.1
85+ Missouri Total	7734.0	7415.4	1528.2	1499.2	2648.4	2338.4	724.9	740.4
85+ U.S. Total	7034.6	6704.5	1488.2	1452.8	2428.1	2113.2	695.0	635.9

Reference: 1, 3, 5, 6, 7, 9

Major Cause of Death - Recommendations

Of particular concern is the mortality rate for pneumonia/influenza, which is substantially higher for Missourians in the 65-74 and the 85+ age groups. Some of these deaths are subject to prevention from immunization and some deaths might have been averted through diagnosis and treatment. At a minimum, efforts to provide influenza vaccine to persons at highest risk of infection should be continued.

Among the 85+ age group, Missouri's mortality rate for heart disease and cerebrovascular disease is also higher than the National figure.

Major Cause of Death - Goals

GOAL: BY 1985, AGE SPECIFIC DEATH RATES FOR THOSE PERSONS 65 AND OVER SHOULD NOT EXCEED THE U.S. RATE FOR THE SAME AGE GROUP.

2. Morbidity

Limitation of Activity Due to Chronic Condition - Issue Identification

This indicator has been examined previously for the population as a whole and for persons aged 45-64. In each case, Missouri was found to have more persons limited in activity than the U.S. or the North Central Region. While one could say that the greater proportion of persons in the 45-64 age group skewed the figure for our total population, the age-specific examination also revealed higher levels in Missouri. Rehabilitation and medical care should be available for those persons currently limited in activity. Prevention programs are also important in order to offset the unnecessary limitations oftentimes associated with the aging process.

Limitation of Activity Due to Chronic Condition - Issue Analysis

Table A-HS-14 in the data appendix under Health Status illustrates some estimates of the degrees of limitation among those 65 and over for the U.S., the North Central Region, and Missouri. Missouri has a greater percentage of this age group (47 percent) who are limited in activity.

Limitation of Activity Due to Chronic Condition - Recommendations

The fact that 47 percent of Missouri's population age 65 and over are limited in activity due to a chronic condition, that 25 percent are limited in amount or kind of activity, and that 16 percent are unable to carry on major activity, speaks to a significant health status problem among our aged population. This data demonstrates the need for easily accessible health services, nutrition services, and community support services.

Limitation of Activity Due to Chronic Condition - Goals

Due to data limitations, no goals will be presented at this time.

Dental Health - Issue Identification

Poor dental health among the aged can lead to nutritional and gastro-intestinal problems as a result of an inability to chew properly. Minimally, Missouri should promote good dental health among the aged as a preventive measure.

Dental Health - Issue Analysis

Table A-HS-15 in the data appendix under Health Status illustrates that in Missouri only 25 percent of our elderly population visited a dentist in the last year. This is 3-4 percent lower than the U.S. estimate or the North Central Region's estimate.

Dental Health - Recommendations

The estimate that only 25 percent of the aged had an annual visit indicates a general lack of good health practices among the aged as a population group; however, because poor dental health can be responsible for other health problems, increased prophylaxis should take place.

Dental Health - Goals

Due to data limitations, no goals will be presented at this time.

3. Accidents and Injuries and Violent Death

Accidental Death - Issue Identification

The aged are at higher risk of accidents due to muscular-skeletal and sensory impairments. It is not reasonable to expect that accidental death rates among this age group should be the same as the rates for the remainder of the population. It is desired, however, that by means of prevention strategies the accidental death rate among the aged be no more than the overall Missouri rate for accidents (other than those related to motor vehicle accidents). Furthermore, the number of accidents among older males should be reduced to a level comparable to the number of accidents among females and both should be reduced through educational and prevention strategies.

Accidental Death - Issue Analysis

TABLE II-HS-26

ACCIDENTS
AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI & THE U.S.
AGE AND SEX SPECIFIC RATES PER 100,000 FOR MISSOURI
1977 AND 1979

AGE GROUP	ACCIDENTS	
	1977	1979
65-74 Missouri Males	91.5	97.8
65-74 Missouri Females	46.4	38.7
65-74 Missouri Total	65.6	63.9
65-74 U.S. Total	60.8	57.1
75-84 Missouri Males	167.3	175.5
75-84 Missouri Females	114.3	83.5
75-84 Missouri Total	134.0	118.1
75-84 U.S. Total	131.2	133.4
85+ Missouri Males	346.3	303.0
85+ Missouri Females	316.2	278.2
85+ Missouri Total	326.0	286.4
85+ U.S. Total	277.5	265.9

Reference: 1, 3, 5, 6, 7, 9.

Missouri's mortality rates due to accidents are consistently higher for each age group when compared to the U.S. Rates for both the U.S. and Missouri have declined from 1977 to 1979.

Accidental Death - Recommendations

There are a number of reasons why age-specific mortality rates are higher for Missouri's aged. The relationship between and among our aged farmers, unsafe housing, travel on rural roads, and (as reported earlier) a greater percentage of aged Missourians who are limited in activity due to chronic conditions illustrates the complexity of cause/effect.

Accidental Death - Goals

GOAL: BY 1985, AGE-SPECIFIC ACCIDENTAL DEATH RATES AMONG THOSE PERSONS AGE 65 AND OVER SHOULD NOT EXCEED THE COMPARABLE U.S. RATES.

Suicide - Issue Identification

The aged should be considered a high risk group, relative to the incidence of depression and suicides. Prevention and psychiatric services are considered important interventions for the reduction of this high risk.

Suicide - Issue Analysis

TABLE II-HS-27
SUICIDE
AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI & THE U.S.
AGE AND SEX SPECIFIC RATES PER 100,000 FOR MISSOURI
1977 AND 1979

AGE GROUP	SUICIDE	
	1977	1979
65-74 Missouri Males	26.6	30.5
65-74 Missouri Females	7.6	6.1
65-74 Missouri Total	21.6	16.5
65-74 U.S. Total	20.5	18.5
75-84 Missouri Males	35.9	42.6
75-84 Missouri Females	2.4	3.9
75-84 Missouri Total	14.8	18.5
75-84 U.S. Total	22.3	22.5
85+ Missouri Males	39.1	25.3
85+ Missouri Females	2.7	5.0
85+ Missouri Total	14.5	11.7
85+ U.S. Total	17.3	14.6

Reference: 1, 3, 5, 6, 7, 9.

When suicide among Missouri's aged is compared with U.S. figures for the same age groups, it is revealed that the rates in Missouri are all slightly less than those for the U.S., even though the rate increased 25 percent from 1977 to 1979 for the total population in the age group 75-84.

Suicide - Recommendations

The Missouri suicide rate increased throughout adolescent and middle life and peaks for the age groups 55-74. This indicates a high risk group to which prevention strategies should be directed. The rates for males are considerably higher than for females and the peak age group suggests a correlation with retirement.

Suicide - Goals

GOAL: BY 1985, SUICIDE RATES AMONG MALES AGED 55-74 SHOULD BE REDUCED BY AT LEAST 5 PERCENT.

4. Socio-Emotional Disorders

Alcoholism - Issue Identification

The link between alcoholism and death from cirrhosis of the liver is not precisely known; however, alcohol has a toxic effect upon the liver and with advancing age, many alcoholics develop the disease.

Alcoholism - Issue Analysis

TABLE II-HS-28

CIRRHOSIS OF THE LIVER
AGE SPECIFIC DEATH RATES PER 100,000 POPULATION FOR MISSOURI & THE U.S.
AGE AND SEX SPECIFIC RATES PER 100,000 FOR MISSOURI
1977 AND 1979

AGE GROUP	CIRRHOSIS OF THE LIVER	
	1977	1979
65-74 Missouri Males	48.0	48.9
65-74 Missouri Females	21.5	22.2
65-74 Missouri Total	32.8	33.5
65-74 U.S. Total	42.4	42.4
75-84 Missouri Males	45.6	33.5
75-84 Missouri Females	19.6	28.1
75-84 Missouri Total	29.2	30.1
75-84 U.S. Total	30.7	29.9
85+ Missouri Males	11.1	20.2
85+ Missouri Females	13.5	12.5
85+ Missouri Total	12.7	15.1
85+ U.S. Total	14.9	17.6

Reference: 1, 3, 5, 6, 7, 9.

Among the 65-74 year olds, Missouri's mortality rate for cirrhosis of the liver is considerably lower than it is for the U.S. For the older age cohorts, Missouri's rates more closely approximate U.S. figures. From 1977 to 1979, rates increased for males in the 85+ age group and for females in the 75-84 age group, while the rate for males in the 75-84 age group decreased.

Alcoholism - Recommendations

Among the older age groups, strategies for reduction of the alcohol related death rate have a more limited impact. For the greatest overall impact, alcoholism should be prevented and/or treated in adolescent and middle life years. However, efforts to reach and treat the aged alcoholic should not be de-emphasized.

Because many older persons are more likely to utilize medication than others in the population, education targeted to this group related to the dangers of mixing medications and alcohol should be emphasized. The magnitude of the problem is not reflected in the cirrhosis of the liver statistics but is believed to be of some significance.

Alcoholism - Goals

GOAL: BY 1985, MORTALITY DUE TO CIRRHOSIS OF THE LIVER AMONG THOSE 65 AND OVER SHOULD NOT EXCEED THE PRESENT RATES BY AGE COHORTS (SEE TABLE II-HS-28).

ENDNOTES

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¹⁰Franklin Top and Paul Wehrle, Communicable and Infectious Disease, (C. V. Mosby, 1972), p. 697.

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²¹Missouri State Highway Patrol, Missouri Crime Summary, for 1978, and 1979, Missouri: Department of Public Safety.

²²Missouri Department of Mental Health, Missouri State Plan on Alcohol and Drug Abuse - FY 1979, (Jefferson City, Missouri, 1978), p. 165.

²³Missouri Department of Mental Health, Missouri State Plan for Developmental Disabilities Services and Facilities Construction Program for FY 1978, (Jefferson City, Missouri, 1978), p. 94.

²⁴Missouri Department of Mental Health, Consolidated Plan for FY 81-83, op.cit., p. 158.

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B. GENERAL DESCRIPTION OF THE STATE

INTRODUCTION

In order to relate health status and health system analyses to the population of Missouri, the characteristics of the population residing in the state must be identified and evaluated. This chapter will present a general description of the state in terms of the nature and composition of its population, its projected growth, and its geographic, social, and economic characteristics, and will attempt to point out related issues in health.

An historical analysis of 1950, 1960, and 1970 census data will be presented for the health service areas (Missouri counties only), the state, and where applicable, the nation. The decision to utilize census data for this socio-demographic profile was made for reasons of accuracy and to facilitate comparisons among the health service areas, the state, and the nation. The foremost limitation of this data is its lack of timeliness; however, by going back to the 1950 census and examining the state from an historical perspective, a greater understanding of the socio-demographic trends taking place within the state hopefully will be achieved.



GEOGRAPHIC CHARACTERISTICS

General Land Forms

Missouri contains a wide variety of land forms and physical characteristics that are difficult to summarize, however, a few of the more prominent features of statewide significance can be identified. Missouri has two prominent land forms divided by the Missouri River. These are the rolling plains to the north and the Ozark foothills and plateaus to the south. The former was created by prehistoric glacial advances that roughly follow the Missouri River between Kansas City and St. Louis; the latter by a series of uplifts and erosion processes over millions of years. Some interesting land form variations in the state are: 1) the high peaks of the St. Francois Mountains which reach a maximum altitude of 1,772 feet at the Taum Sauk Mountains; and 2) the "Bootheel" area in the extreme southeast which has the lowest altitudes in the state - down to 230 feet. Interestingly enough, these two areas are only about 100 miles apart, thus providing evidence of the abrupt changes in land form that typify the state.

River Drainages

Missouri is blessed with many rivers. The three major drainage areas are the Mississippi, Missouri, and the White River basins. The Missouri River drains most of northwest and central Missouri with the aid of a number of secondary drainage streams which include the Nodaway, Platte, Grand, Lamine, Chariton, Osage, and Gasconade Rivers. The Mississippi River drains northeast Missouri and eastern side of Missouri with the aid of a number of secondary streams including the Fox, Wyaconda, Fabius, North, Salt, Cuivre, Meramec, Headwater Diversion, and St. Francis Rivers. The White River, which drains along the southern boundary of the state, includes the James, North Fork-White, Eleven Point, Current, and Black Rivers.

Topography and Relief

Missouri's topography and relief varies widely across the state (see relief map) and may even make drastic changes in a short distance, especially in the southern Ozark foothills area. Five major geographic regions can be identified, however, and in describing these regions, the terms "local relief" and "local slope" are used extensively. Local relief is the difference in elevation between a valley bottom and an adjacent ridge or hilltop, and land slope refers to grades of the local terrain expressed in percentages.

Northeastern Missouri is a moderately dissected, homogeneous region within the glacial plains of northern Missouri. It has a maximum local relief of 75 to 100 feet and land slopes of less than 10 percent.



SHADED RELIEF MAP OF MISSOURI (WITH PHYSIOGRAPHIC DIVISIONS AND LARGE SPRINGS)

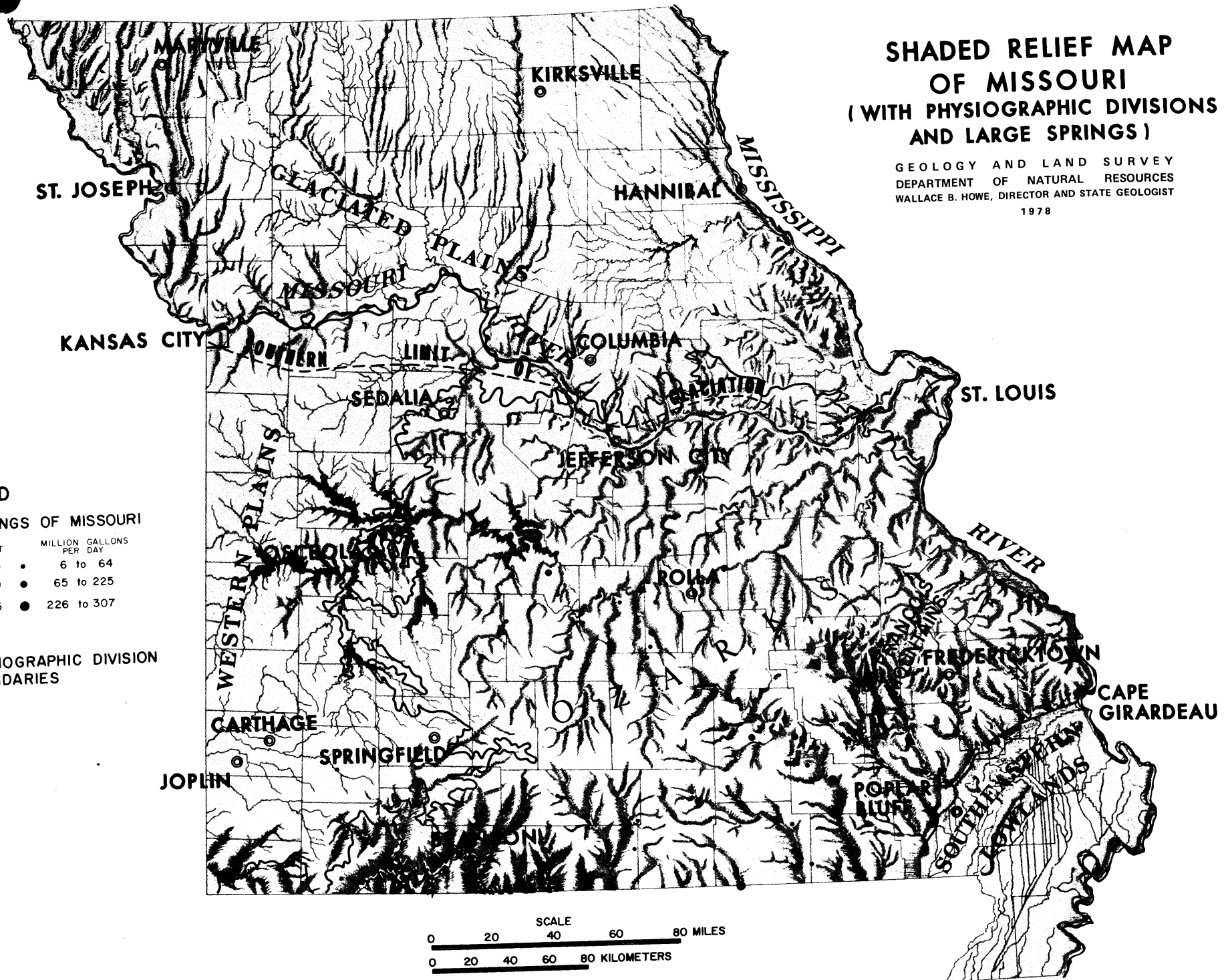
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WALLACE B. HOWE, DIRECTOR AND STATE GEOLOGIST
1978

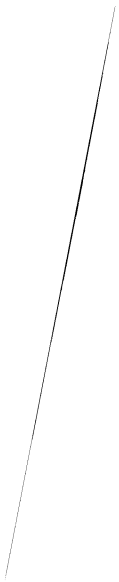
LEGEND

LARGE SPRINGS OF MISSOURI

SECOND	FEET	MILLION GALLONS PER DAY
10 to 99	•	6 to 64
100 to 349	•	65 to 225
350 to 475	•	226 to 307

— PHYSIOGRAPHIC DIVISION
BOUNDARIES





The remainder of northern Missouri is moderately dissected to smooth plains with a maximum local relief of 100 to 200 feet and land slopes of normally less than 10 percent.

The third region contains generally rolling plains and is composed of a two to three county wide swath parallel to the Kansas state line from the Missouri River to the Arkansas state line. It has a maximum local relief of 75 to 200 feet and land slopes of less than 10 to 35 percent.

The highly dissected plateaus of the south central portion of the state is another identifiable area. It is a dispersed region of rolling plains and high peaks which is characterized, as a rule, by relief of 200 to 300 feet and land slopes of 10 to 35 percent. This south central portion of the state also contains areas possessing local relief of 500 to 700 feet and local slopes of 35 to 50 percent.

The flat low lands of the river valleys, especially in the Missouri and Mississippi Rivers, and the entire area of the Bootheel, is a region that has little or no relief and land slopes of only a few feet per mile. The only variation in the terrain of these areas is the abrupt bluff lines that often separate the river valleys from adjacent uplands. Another terrain characteristic in Missouri is the belt of high peaks (1,000 to 1,200 feet plus) which enters the southwestern section of the state in Barry County and extends in a northeast direction through Springfield and culminates in the highest peaked area in Missouri, in the vicinity of Iron County.

Special Geographic Considerations

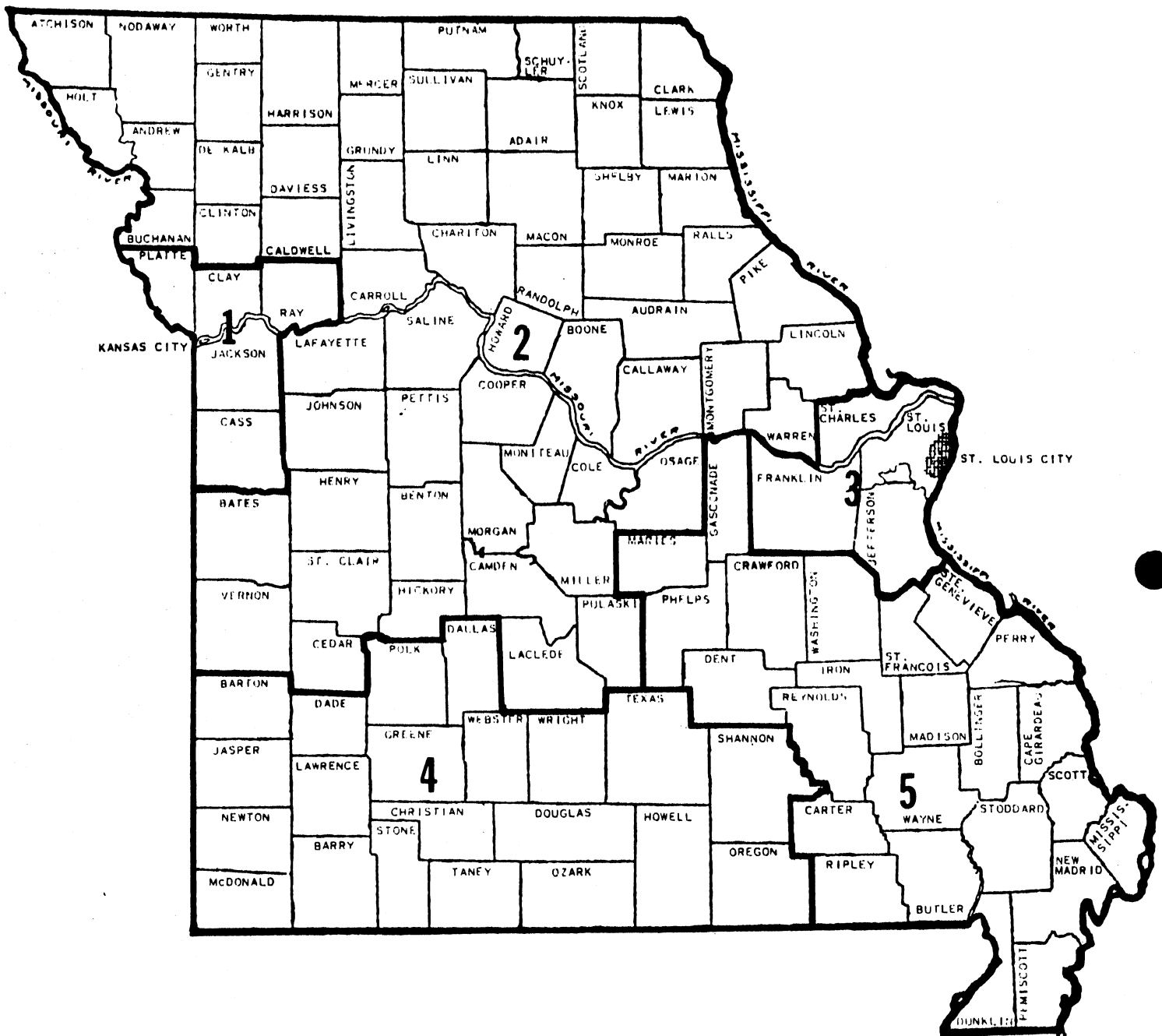
The Missouri River limits accessibility to health care services due to the limited number of bridges that span the river across the state. Considerable travel time may be required to reach medical care via these bridges. The Lake of the Ozarks poses a similar accessibility problem, and if several proposed man made lakes are constructed in the state, they will also impede access to medical services. The terrain of the Ozark foothills, along with the river system in the southern part of the state, will also greatly increase the travel time required to access health services.

Health Service Area Boundaries

Missouri is divided into five health service areas, each served by a Health Systems Agency (HSA)(See Map II-GDS-2). Health Service Area* I is composed of five counties in the western section of the state. The boundaries of Area I coincide with those of the Kansas City Standard Metropolitan Statistical Area (SMSA), and include three counties in the State of Kansas.

*Henceforth, the five "health service areas" will be referred to as Area I, Area II, Area III, Area IV, and Area V.

MAP II-GDS-2
MISSOURI HEALTH SERVICE AREAS



Area II encompasses sixty counties and extends completely across the northern portion of the state, from the Kansas and Nebraska borders on the west to the Illinois border on the east. In addition, Area II extends southward from the Iowa border into the central portion of the state and contains two SMSAs, St. Joseph and Columbia.

Area III, which coincides with the boundaries of the St. Louis SMSA, encompasses four Missouri counties and the City of St. Louis, plus four counties in Illinois.

Area IV encompasses twenty-one counties in southwest Missouri, and contains the Springfield SMSA. Area IV shares its borders with the neighboring states of Kansas and Oklahoma on the west and Arkansas on the south.

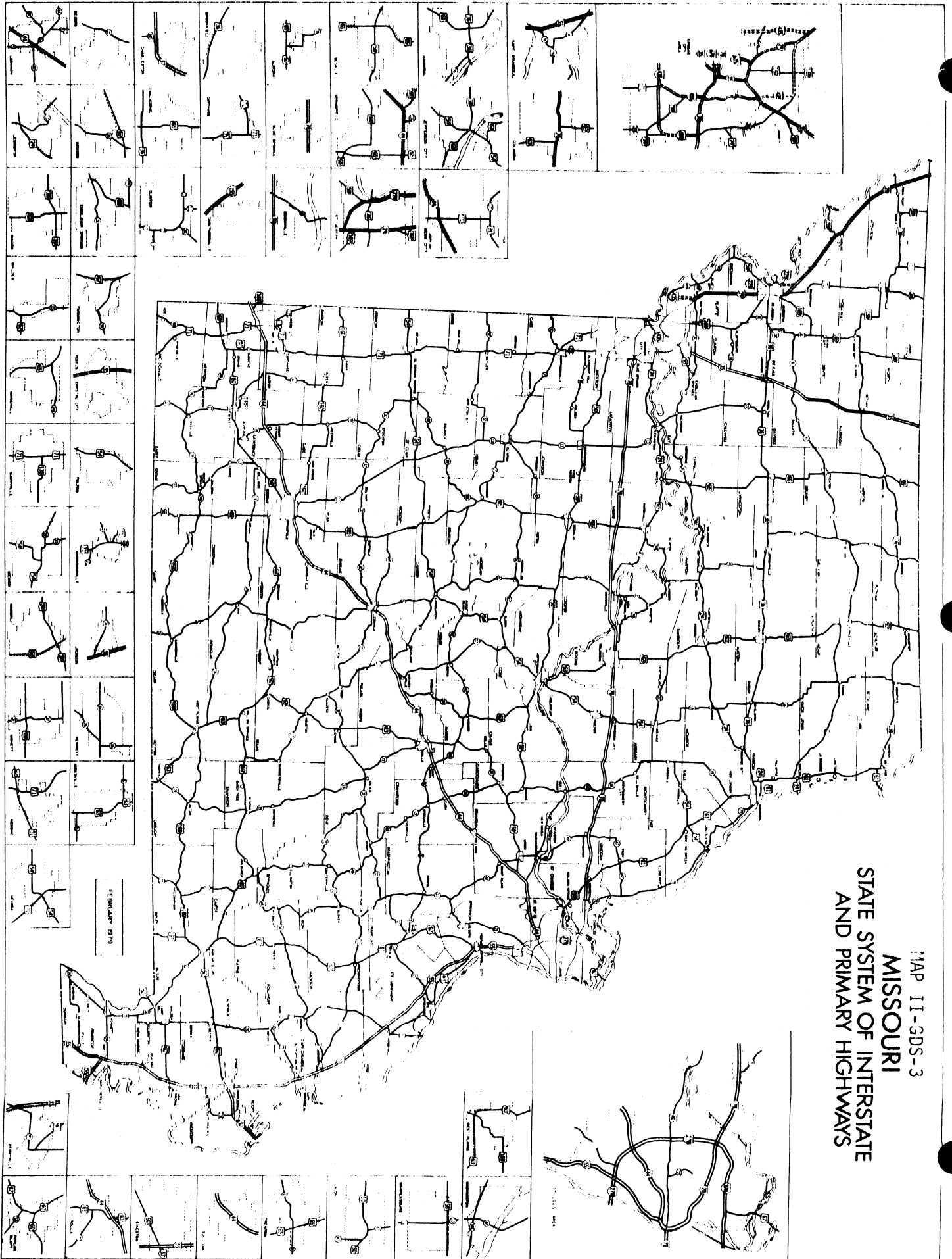
Area V is located in the southeastern section of the state and encompasses twenty-four counties. Area V is bordered on the south by Arkansas, on the east by Tennessee, Kentucky, and Illinois, and shares its northern and western boundaries with Areas II, III, and IV.

Transportation Network

Five interstate highway systems pass through Missouri (See Map II-GDS-3). Interstates 29 and 35, in the northeast section, run in a north-south direction and feed into Kansas City. Interstate 70 runs from east to west across the mid-section of the state in a northeast to southwest direction, connects St. Louis and Springfield. Interstate 55 runs from north to south in the east central and southeast portions of the state and connects St. Louis, Cape Girardeau, and Sikeston. U.S. highways also crisscross the state, and Missouri's state highways attempt to fill the intervals left by the U.S. network. As can be seen from Map II-GDS-3, large gaps still remain in this network in the rural areas of the state.

Accessibility to health facilities located in the small towns and cities of Missouri's rural areas is hampered by the large gaps in the state's primary highway network. Improvements in secondary roads surrounding Missouri's rural towns and cities would ameliorate some of the problems associated with accessibility to health and medical facilities in Missouri.

MAP II-GDS-3
MISSOURI
STATE SYSTEM OF INTERSTATE
AND PRIMARY HIGHWAYS



DEMOGRAPHIC CHARACTERISTICS

Trends in Population

The population of Missouri is growing at a slower rate than that of the United States and is steadily declining as a percentage of the U.S. population (Figure II-GDS-1). Missouri's population increased 9.2 percent from 1950 to 1960, from approximately 3.9 million to 4.3 million persons. By 1970, the population of the state had risen to about 4.7 million, an 8.3 percent increase over the 1960 census figure. The population of the United States, during the same two decades, increased by 18.5 percent and 13.5 percent respectively. One explanation for the state's relatively slow increase in population, especially from 1950 to 1960, lies in its high population loss through migration.

The most striking feature of the state's population growth during this period is the considerable variation in population trends within the state. Between 1950 and 1960 there was an increase in the population of Area I of 22.4 percent in contrast to a decrease of 6.5 percent in Area V. During the period from 1960 to 1970, of the five health services areas, Area III experienced the largest percentage increase in population, 12.9 percent. The population of Area V continued its trend of the previous decade with a further decrease of 3.5 percent. Map II-GDS-4 illustrates the population trends from 1890 to 1970 for each county in the state.

From 1950 to 1970, Areas I and III experienced the largest percentage increases in population, while Areas II, IV, and V experienced lesser increases, or even decreases in population. During the next two decades, from 1970 to 1990, it is predicted that this trend will be reverse. The latest population projections indicate that by 1980 the population of Area IV will have increased by 22.1 percent from its population in 1970, while the population of Area III will have decreased by 3.1 percent. The projected population of the state in 1980 is almost 4.9 million, an increase of 4.4 percent from 1970.

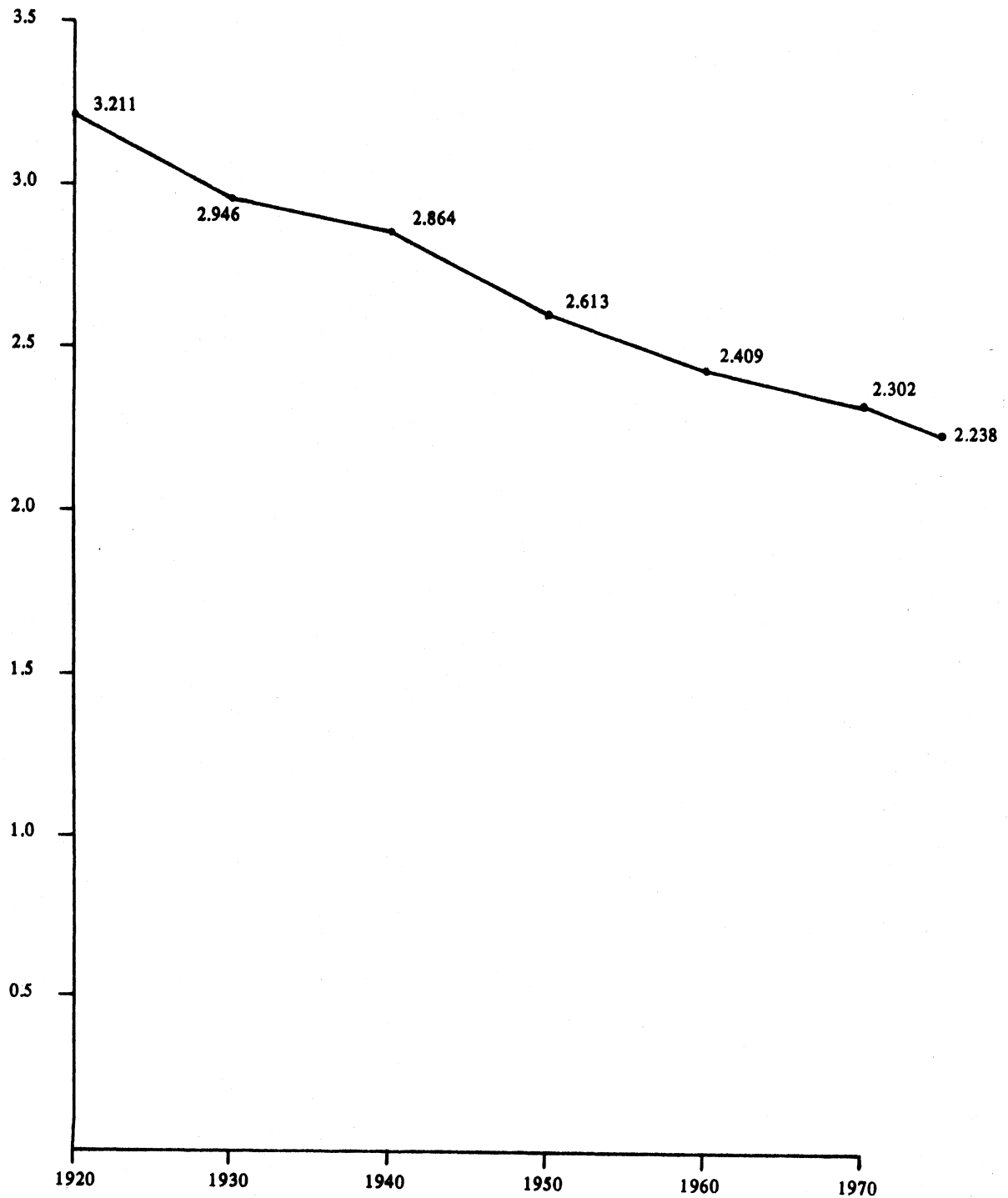
The population projections for 1990 portray the populations of all the health service areas as increasing from 1980 levels. The 1990 projections indicate that Area IV's population will undergo the largest increase, 24.4 percent, while Area III will experience the smallest percentage increase over 1980, only 3.0 percent. The projection for the state population in 1990 is almost 5.3 million, an increase of approximately 400,000, or 8.3 percent over the projected population of 1980.

Distribution of Population

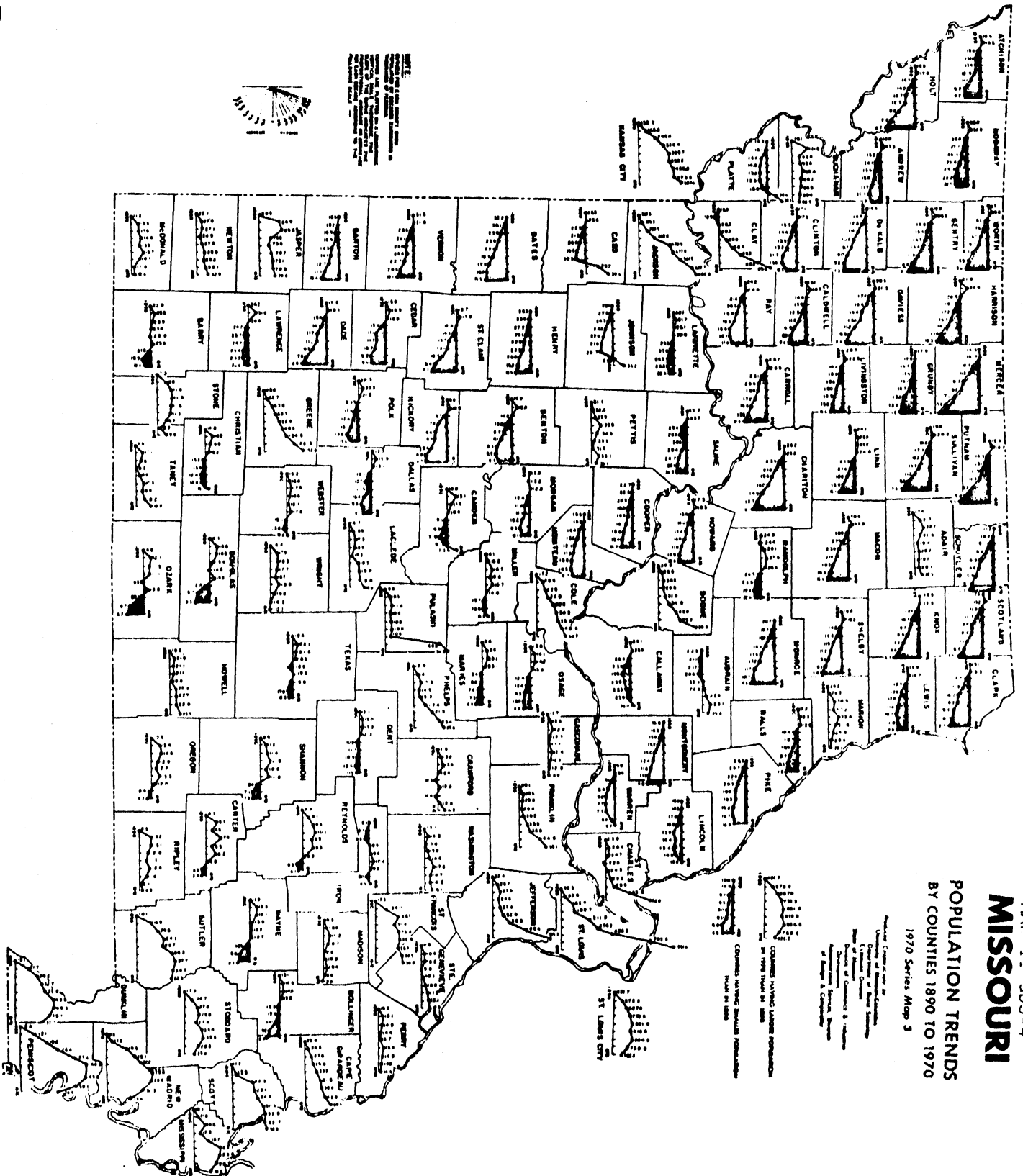
In 1950, the largest concentration of the almost 3.9 million persons residing in the state was in the St. Louis area; the population in Area III represented 34.6 percent of the total state population. Area II contained 24.9 percent of the state's population, Area I, 16.1 percent, Area V, 12.6 percent, and Area IV, 11.8 percent.

II-GDS-10

FIGURE II-GDS-1
MISSOURI POPULATION AS
A PERCENT OF
UNITED STATES POPULATION



Reference: 1.



In comparison, the state's population in 1970, approximately 4.7 million persons, was distributed among the health service areas as follows: Area III, 39.1 percent, Area II, 21.9 percent, Area I, 18.5 percent, Area IV, 10.8 percent, and Area V, 9.7 percent. Over this 20 year period, this represents a considerable increase for Area I and Area III, and a decrease for Areas II, IV, and V. By 1990, with the state's population projected to be almost 5.3 million, Area III's share is projected to fall back to 34.5 percent - about the same amount it had in 1950. Area II is projected to contain 22.8 percent of the state's population, Area I is expected to have 17.5 percent, Area IV, 14.5 percent, and Area V, 10.7 percent.

Population Density

Missouri's population density has increased steadily from 1950 when the state had 57.1 persons per square mile. In 1960, the population per square mile had risen to 62.5, and by 1970 the figure was 67.8. This trend in population density in the state is consistently higher than the density of the United States. The population density of the nation in 1950 was 42.6, in 1960, 50.6, and in 1970, 57.5 persons per square mile.

The variation in population density throughout the state in 1970 ranged from 673.4 persons per square mile in HSA III to 29.6 persons per square mile in Area II. Areas I and III showed the greatest increase in population density over the 20 year period with the increases of 35 and 34 percent, respectively. In contrast, Area II increased less than 1 percent, Area IV increased 9 percent, and Area V decreased 10 percent.

Urban-Rural Distribution

The segment of the population classified as "urban" includes those persons residing in unincorporated places of 2,500 or more, as well as the densely populated "metropolitan fringe" around central cities. In 1950, 61 percent of the state's population resided in urban areas. In 1970, the urban population accounted for 70 percent of the total state population. This compares to 64.0 percent of the United States population classified as urban in 1950 and 73.5 percent in 1970.

There is considerable variation in the urban and rural population distributions among the health service areas in the state. In 1970, approximately 89 percent of the populations in both Areas I and III are classified as urban. In contrast, 53.5 percent, 55.7 percent, and 61.0 percent of the populations in Areas II, IV, and V respectively, resided in rural areas in 1970.

From 1950 to 1970, substantial shifts in the residential location of the state's population has resulted from migration. Significant trends include the movement of populations to the outlying areas around the major urban centers, and the increasing proportions of the population in smaller towns and cities. By 1980, it is projected that the populations in Area II and Area IV will be predominantly urban as the trend of rural to urban migration continues.

The segment of the rural population that resides on farms has been drastically decreasing, although a higher percentage of the rural population in Missouri reside on farms than for the nation as a whole. The percentage of the rural population in Missouri that reside on farms has decreased from 56.7 percent in 1950 to 25.7 percent in 1970, while the same figure for the United States has decreased from 42.5 percent in 1950 to only 15.4 percent in 1970.

Racial Characteristics

In 1950, 92.4 percent of the state's population was white and 7.6 percent was non-white. In 1970, these figures had changed to 89.3 percent white and 10.7 percent non-white. This compares to U.S. figures of 89.5/10.5 percent white/non-white in 1950, and 87.5/12.5 percent white/non-white in 1970.

The variation of racial composition within the state ranges from 83.0/17.0 percent white/non-white in Area III in 1970 to 98.9/1.1 percent white/non-white in Area IV for the same year. The non-white percentage of the population has increased in each health service area in the state from 1950 to 1970 except in Area V, where the non-white percentage of the population decreased from 6.3 percent in 1950 to 5.7 percent in 1970.

From 1950 to 1970, the distribution of Missouri's non-white population increased in the predominantly urban Health Service Areas I and III, and decreased in the predominantly rural Health Service Areas II, IV, and V. In 1950, 58.0 percent of Missouri's non-white population of 299,000 resided in Area III, 19.6 percent in Area I, 10.6 percent in Area II, 10.5 percent in Area V, and 1.3 percent in Area IV. In 1970, 62.0 percent of the state's non-white population of 499,000 resided in Area III, 24.0 percent in Area I, 7.7 percent in Area II, 5.2 percent in Area V, and 1.1 percent resided in Area IV.

Age Characteristics

The median age of Missouri's population has been steadily decreasing from 1950 to 1970; however, it has been consistently higher than the median age of the nation. In 1950, the state's median age was 32.5 years and the median age of the United States was 30.2 years. In 1960, the difference remained about the same with a median age for the state of 31.6 and a national median of 29.2 years. By 1970, the difference between the median age of the state and the nation narrowed to 1.4 years, with the state median of 29.5 years and the national median of 28.1 years of age.

Compared with the nation, Missouri has a considerably higher proportion of persons 65 years of age and older, and a slightly lower proportion of children, young adults, and middle aged adults. The percentage of the state's aged (those 65 years of age and older) has increased from 10.3 percent in 1950 to 11.6 percent in 1960, and to 12.0 percent in 1970. For the same years, that portion of the nation's population increased from 8.1 percent to 9.2 percent and to 9.9 percent

respectively. The difference between the proportion of aged persons in Missouri's population and that of the United States is decreasing, with the nation's aged population increasing by 35.0 percent from 1950 to 1960 and 21.1 percent from 1960 to 1970 while Missouri's population in that age group only increased 23.0 percent and 11.4 percent respectively during those decades.

Variations in the age composition among the health service areas within the state are considerable. For each decade since 1950, urban Health Service Areas I and III have had a smaller percentage of persons 65 years of age and older than the state, while predominantly rural Health Services Areas II and IV consistently have had a greater proportion of aged residents than the state. Furthermore, the percentage of aged persons in Area II consistently has been at least three percentage points higher than the state's proportion of persons 65 years of age and older. The percentage of aged persons in the population of Area V has been increasing steadily from 1950, when it was less than that of the state, to 1970 when Area V had a larger percentage of aged persons than the state.

Dependency

Dependency is the method of relating the populations of those persons under 18 years of age and those 65 years of age and older to the population in the age group 18-64. The youth dependency ratio is the number of persons in the under 18 age group per 100 persons in the age group 18-64. The aged dependency ratio is the number of persons ages 65+ per 100 persons in the 18-64 age group. The combined dependency ratio is the total of persons under 18 and 65+ per 100 persons ages 18-64. Besides being simply a means of comparing the age distributions of various populations to one another, dependency ratios are also a measurement of the degree of economic dependency of the non-working population to the working population, i.e., the higher the figure, the greater is the economic dependence of the non-employed segment on the employed segment of the population.

The youth dependency ratios for the state in 1950, 1960, and 1970 of 47.9, 61.9, and 60.6, respectively, are all lower than the youth ratios for the United States of 51.0 in 1950, 65.1 in 1960, and 61.4 in 1970. The aged dependency ratios in Missouri of 17.0 in 1950, 21.4 in 1960, and 21.9 in 1970 are all higher than the aged ratios for the United States, of 13.4, 16.8, and 17.7 in 1950, 1960, and 1970, respectively. This means that Missouri has a fewer number of people than the nation as a whole in the dependent age group of under 18 years of age, and a larger number of people than the United States in the dependent age group of 65 years of age and older that must be supported by the working segment of the population.

The combined dependency ratios for Missouri of 64.9 in 1950, 83.3 in 1960, and 82.5 in 1970 are all greater than the combined ratios for the United States in 1950, 1960, and 1970 of 64.4, 81.9, and 79.0, respectively. In addition, the trend from 1950 to 1970 is one of an

increasing difference between the combined dependency ratios of Missouri and the United States even though both of the ratios decreased from 1960 to 1970.

There is considerable variation in the dependency ratios among the five health service areas in the state. In 1970, the youth dependency ratio varied from a high in Area V of 64.3 to a low of 54.6 in Area II. The youth ratio of 64.3 in Area V represents a decrease from its youth ratios of 71.4 in 1950 and 75.0 in 1960. The range in the variation of aged dependency ratios, in 1970, was from a high of 27.4 in Area II, to a low of 18.2 in Area I. The range in variation of 1970 combined dependency ratios was from a high of 90.1 in Area V to 79.1 in Area I. It should also be mentioned that the very high combined dependency ratio of 90.1 in Area V in 1970 was a considerable decrease from this area's combined ratio of 98.2 in 1960.

Health Implications of Demographic Characteristics and Trends

One advantage of Missouri's relatively slower rate of population growth compared to that of the nation is that greater opportunity is possible for the planning of health care facilities and services. Areas within the state that are losing population should plan to make more efficient use of existing facilities in order to serve larger areas. Also, during a period of slow population growth, considerably more caution should be used in any plans for the expansion of health care facilities.

The loss of population in rural areas, already of low population density, creates even more severe problems of accessibility in utilizing health services. The loss of population from the older central cities, often resulting in deteriorating housing conditions, can have serious effects on the health of the population remaining in the central city.

A rapid gain in population in the rural, outlying areas surrounding urban centers can also have serious health implications. Unplanned growth in such areas often takes place without minimum land use regulations and adequate sewage treatment and disposal systems. These problems, along with a shortage of health care facilities, can pose very serious health problems.

The non-white population with its unique health status and health system utilization characteristics is increasing at a significantly faster rate than the white population and is also becoming more urbanized. Non-whites utilize physician services less often than whites, however, hospital clinics and emergency rooms are utilized more often for physicians consultation by non-whites than by whites.

The recent increases in the aged population in Missouri are placing a much greater demand on the health services and facilities of the state. This is primarily due to the increased prevalence of chronic diseases among this age group. When hospitalized, the aged tend to require a longer hospital stay, thus increasing the demand for hospital beds; following hospitalization, the aged are also more likely to require longer rehabilitation periods, thus increasing the demand for

nursing home beds. In addition, the increasing aged dependency ratio in the state will result in an increasing economic burden on the working population, especially considering the recent trends in health care costs.

SOCIAL CHARACTERISTICS

Educational Characteristics

The educational level of Missouri's population has been rising, however, in 1970, still remained slightly below that of the nation as whole. The median school years completed in 1970 of 11.8, for Missouri's population twenty-five years of age and above, represents a significant increase from the median in 1960 of 9.6 years, and the median in 1950 of 8.9 years. The median school years completed for the United states in 1950, 1960, and 1970 was 9.3, 10.6, and 12.1, respectively.

In 1970, 51.2 percent of Missouri's population, aged twenty-five and above, had completed less than twelve years of education. This segment of the population has been steadily decreasing in size from 1950 when 67.1 percent had not finished high school. For the nation as a whole, the segment of the adult population receiving less than twelve years of education declined from 63.9 percent in 1950 to 47.6 percent in 1970.

The level of educational achievement among the health service areas in Missouri in 1970 ranged from 11.0 percent of the population (ages twenty-five years and above) in Area III that had completed four or more years of college, to 5.6 percent in Area V. In 1970, Area V also had the highest proportion of the twenty-five years of age and above population that had completed less than twelve years of education, 66.4 percent. The figure of 42.1 percent in Area I represents the lowest proportion of persons receiving less than twelve years of education of the five health service areas in 1970. The median number of school years completed for those persons ages twenty-five and above in Area I, in 1970 was 12.2, while the same figure for Area V was 9.4 years. The level of educational achievement, in 1970, of the populations in other health service areas is represented by the median number of school years completed in Area II of 11.3 years, 11.1 years in Area IV, and 11.0 years in Area III.

Household Characteristics

The total number of households in Missouri has increased at a faster rate than the state's population. The number of households in the state increased 13.5 percent from 1950 to 1960, and 11.8 percent from 1960 to 1970, when there were approximately 1.5 million households in the state. The number of persons per household for the state has decreased from 3.18 in 1950, to 3.10 in 1960, and to 2.98 in 1970. In 1970, the population per household in Area III, 3.14 persons, represents the highest of the health service areas in the state, while Area II

and Area IV share the lowest population per household of 2.83 persons. Interestingly, Area V had 3.61 persons per household in 1950 and 3.31 persons in 1960, which were significantly higher figures than the population per household for the state and the other health service areas for those years. In 1970, the populations per husehold in Area V decreased to 3.01 persons, probably due to the continued loss in population during these decades due to out-migration.

Health Implications of Social Characteristics

Educational achievement is directly related to health status and utilization of the health system. Low educational achievement is correlated with a lack of knowledge concerning proper nutrition, and preventive and remedial health measures. Low levels of educational achievement in a population implies an increased need for community health education services for purposes of improving prevention and detection. Educational level also directly correlates with an increased awareness of the value and importance of pevention, detection and the prompt treatment of the health problems.

ECONOMIC CHARACTERISTICS

Employment

From 1950 to 1970, the labor force in Missouri and employment in the state increased at a slower rate than the labor force and employment in the United States. In 1970, the total civilian labor force in Missouri was approximately 1.85 million persons. This figure represents a 17.2 percent increase in the civilian labor force in the state since 1950. The civilian labor force of the United States increased 37.7 percent from 1950 to 1970. Employment in Missouri increased 16.1 percent from 1950 to 1970 while the nation's employment increased 37.5 percent. Unemployment, as a percentage of the total civilian labor force, increased in Missouri from 3.3 percent in 1950 to 4.2 percent in 1970. Unemployment in the U.S. decreased from 4.8 percent in 1950 to 4.4 percent in 1970.

The degree of change in the work forces, employment, and unemployment in the health service areas in Missouri varies considerably from 1950 to 1970. In Area I, over the 20 year period, the labor force increased 34.5 percent, employment increased 34.1 percent, and unemployment increased from 3.2 percent in 1950 to 3.5 percent in 1970. The labor force in Area II increased 2.0 percent from 1950 to 1970, employment increased 0.8 percent, and unemployment increased from 2.4 percent to 3.5 percent. Area III's labor force increased 27.3 percent, employment increased 26.0 percent and unemployment increased from 3.7 percent to 4.7 percent. The labor force in Area IV increased 12.3 percent from 1950 to 1970, employment increased 10.4 percent, and unemployment increased from 2.9 percent in 1950 to 4.5 percent in 1970. Finally, Area V's labor force decreased from that of 1950 by 7.9 percent. Employment in Area V decreased also by 8.5 percent, and unemployment increased from 4.9 percent to 5.5 percent.

The major trend that has taken place, concerning employment within Missouri from 1950 to 1970, is the more rapid rate of growth of employment in Areas I and III. This is the main factor that resulted in the large amount of in-migration to these urban centers during these years, and the out-migration from Areas II, IV, and V.

Employment by Industry

In 1970, the largest proportion of Missouri's labor force was employed in the state's service industries. The majority of employment in the service industry was in the fields of medicine and health, education, and business services. The service industry employed 25.2 percent of the working labor force. Manufacturing used 24.4 percent, and the retail industry employed 16.6 percent of the state's labor force.

The industries that utilized the highest proportion of the nation's labor force in 1970 were the same as those in Missouri. Nationally, the service industry used 26.2 percent of the labor force, manufacturing, 25.9 percent, and retail trade, 16.0 percent. A significant variation in the labor force distributions of Missouri and the U.S. occurred in agriculture, where 5.1 percent of the Missouri's labor force and only 3.7 percent of the nation's work force were employed in this industry.

Labor distributions within the state are related to the urban-rural distribution. Due to the transportation facilities, numerous banking institutions, insurance companies, and federal government regional headquarters located in Kansas city, the proportions of the labor force in Area I employed by these industries in 1970 was greater than the proportion in the state. In Area I, 8.2 percent of the labor force is employed in transportation and utilities (compared to 6.1 percent for the state), 6.0 percent was employed in finance, insurance, and real estate (compared to 4.7 percent for the state), and 6.5 percent was employed in public administration (compared to 5.2 percent for the state). The most significant difference between the labor distribution in Area III and that of the state was the 28.6 percent of Area III's labor used in manufacturing compared to 24.4 percent of the state's labor force employed in that industry. The significant differences between the labor distribution in Area II and that of the state were that 13.3 percent of the labor was utilized in agriculture (compared to 5.1 percent in the state), 17.7 percent was used in manufacturing (compared to 24.4 percent in the state), and 27.2 percent was employed in the service industry (compared to 25.2 percent in the state). The outstanding differences between Area IV and the state occurred in the retail trade industry (17.7 percent compared with 16.6 percent of the state's labor force), agriculture (7.9 percent in Area IV and 5.1 percent in the state), and finance, insurance, and real estate (3.6 percent compared to 0.6 percent in the state), the construction industry (7.4 percent of labor compared to 5.9 percent), finance, insurance, and real estate (2.8 percent compared to 4.7 percent in the state), and public administration (3.7 percent compared with 5.2 percent of the state's labor force).

Trends in Employment

Between 1950 and 1970, the most significant changes in the labor distribution of both Missouri and the United States occurred in the service industry, manufacturing, and agriculture. In 1950, the service industry in the United States employed 17.9 percent of the labor force. This proportion of the U.S. labor force increased to 21.0 percent in 1960, and to 26.2 percent in 1970. The proportion of Missouri's labor force employed in the service industry increased from 16.6 percent in 1950 to 19.3 percent in 1960, and to 25.2 percent in 1970. The proportion of the U.S. labor force employed in manufacturing increased from

26.0 percent in 1950, to 27.1 percent in 1960, and decreased to 25.9 percent in 1970. The proportion of Missouri's labor used in manufacturing followed the same trend but even more dramatically. In 1950, 23.9 percent of Missouri's labor force was employed in manufacturing. In 1960, this proportion climbed to 29.7 percent, and in 1970, the proportion in manufacturing had decreased to 24.4 percent. The proportion of the U.S. labor force employed in agriculture decreased from 12.5 percent in 1950, to 6.7 percent in 1960, to 3.7 percent in 1970. Missouri's agricultural labor force decreased during the same period from 17.6 to 9.5, and 5.1 percent in 1970.

Income

In 1970, Missouri's per capita income of \$2,983 was less than that of the United States, \$3,687, and, since 1950, has been increasing at a slower rate than the per capita income for the United States. The median family income for Missouri in 1970 was \$8,914, compared to that for the U.S. of \$9,433. However, since 1950, the state's median family income has been increasing at a faster rate than the nation's median family income.

Per capita and median family incomes for the health service areas in the state can be divided according to urban-rural characteristics. The per capita and median family incomes in Areas I and III (both predominantly urban) are both higher than those of the state, but are increasing at a slower rate than those of the state. In 1970, the per capita and median family incomes of Area I were \$3,348 and \$10,197, respectively. Area III's per capita and median family incomes were \$3,438 and \$10,691, respectively. Areas II, IV, and V (all predominantly rural) had per capita and median family incomes that were lower than those of the state, however, they increased at a faster rate than those incomes for the state. In 1970, the per capita incomes in Areas II, IV, and V were \$2,512, \$2,516, and \$2,150, respectively. The median family incomes in 1970, for Areas II, IV, and V were \$7,217, \$6,670, and \$6,225, respectively.

Poverty

Poverty levels, developed by a federal inter-agency commission in 1969, were established on the basis of family size, number of children, farm or non-farm residence, as well as the amount of money income. In 1970, the proportion of families in Missouri that had incomes below the poverty level was greater than that of the United States. Of Missouri's total number of families, 11.5 percent were classified, in 1970, as having incomes less than the poverty level. In comparison, 10.7 percent of the nation's total number of families were in this classification. For the same year, 7.3 percent of the families in the state had incomes less than 75 percent of the poverty level, compared to 7.0 percent in the United States. A greater divergency occurred between Missouri and the nation in relation to the proportions of families with incomes less than 125 percent of the poverty level. In Missouri, 16.6 percent of the total number of families were below 125 percent of the poverty level, compared to only 15.0 percent of the nation's families.

The variation in poverty within the state follows the same pattern as per capita and median income levels. Higher proportions of families with incomes less than the poverty level were located in the predominantly rural Areas of II, IV, and V. The proportions of families with income below the poverty level in Areas II, IV, and V were all higher than the proportion of the total numbers of families in the state. The proportion of families below the poverty level in Areas I and III were lower than that of the state. The proportion of families below the poverty level in Area V is significantly higher than that of the state and the other four health service areas. In Area V, in 1970, 22.2 percent of the families had incomes less than the poverty level (while the state had 11.5 percent), 13.8 percent had incomes less than 75 percent of the poverty level (compared to 7.3 percent in the state), and 31.0 percent had incomes less than 125 percent of the poverty level (compared to 16.6 percent in the state).

Another indicator of poverty in Missouri is the distribution of the state's welfare dollars. In 1970, of the five health service areas, Area III contained the largest proportion of the state's total welfare recipients and also received the largest proportion of the state's total amount of welfare dollars. However, the total population in Area III also represented the largest proportion of the state's total population, 39.1 percent. Along with this, 36.7 percent of the total number of persons receiving welfare in the state lived in Area III, and these recipients accounted for 32.5 percent of the state's total welfare dollars. In contrast to the relatively proportionate distribution of the state's population and welfare recipients in Area III, 18.4 percent of the state's welfare recipients, and 19.1 percent of the total welfare dollars were apportioned to Area V where only 9.7 percent of the population of Missouri lived. This significantly disproportionate distribution of the state's population and welfare dollars in Area V emphasizes the severity of poverty that was shown to exist in the earlier discussion concerning the proportion of families with incomes less than the poverty level.

Poverty Trends

Between 1950 and 1970, Missouri's population increased 18.2 percent, its number of welfare recipients increased 36.6 percent, and as a proportion of the state's population, the number of welfare recipients increased from 5.5 percent to 6.3 percent. The trend in the distribution to the state's welfare recipients from 1950 to 1970 was one of an increasing proportion of recipients in the urban Areas I and III and a decreasing proportion of the state's welfare recipients in the predominantly rural areas II and IV. The severity of poverty in Area V is clearly demonstrated when compared to both the state and the other health service areas.

To some extent, increases in welfare recipients in urban areas reflect population increases. Between 1950 and 1970, Area I's population increased 36.2 percent, its number of welfare recipients increased 65.6 percent, and, as a percentage of Area I's total population, the number of welfare recipients increased from 4.0 percent in 1950 to

4.9 percent in 1970. The population increase in Area III and the increase in the welfare recipients was 33.6 percent and 126.0 percent, respectively. The proportion of the population in Area III receiving welfare increased from 3.5 percent in 1950 to 5.9 percent in 1970.

In contrast to Areas I and III, the number of welfare recipients in both Area II and Area IV decreased, by 16.8 percent and 3.6 percent respectively. The population of Area II increased 4.1 percent from 1950 to 1970, and Area IV's population increased 8.5 percent. The proportion of the population in Area II receiving welfare decreased, from 6.5 percent in 1950 to 5.2 percent in 1970. This proportion of Area IV's population also decreased from 8.2 percent to 7.3 percent. Area V was an exception to the decreasing welfare rates in other rural areas. Welfare recipients in Area V increased 35 percent from 1950 to 1970, while its population decreased by 9.7 percent. In addition, the proportion of the total population that received welfare increased from 8.0 percent in 1950 to 12.1 percent in 1970.

Substandard Housing

Substandard housing in Missouri will be described in terms of the percentage of year-round housing units that lack some or all plumbing facilities. In 1970, 9.0 percent of the total year-round housing units in Missouri were in this category compared to only 6.9 percent of the housing units in the United States. Substandard housing in Area V, 20.3 percent represented the highest proportion among the health service areas. Area II had 14.4 percent of its housing classified as substandard, Area IV, 13.0 percent, Area III, 4.2 percent, and Area I had 3.6 percent. It is clearly apparent that the predominantly non-urban health service areas contain the highest proportions of substandard housing.

Overcrowding

The proportions of overcrowding, expressed as the percentage of the total number of occupied housing units with greater than or equal to 1.01 persons per room, are about the same for Missouri and the United States and have been decreasing at the same rate since 1950. Overcrowding in the state has decreased from 16.5 percent of the total occupied housing units in 1950, to 8.0 percent in 1970, while the proportion in the United States has decreased from 15.5 percent to 8.2 percent. Overcrowding in Areas III and V has been consistently greater than for the state during these years, Areas I and II have had consistently lower proportions of overcrowding, while overcrowding in Area IV has been approximately the same as the proportion in the state. Area V has consistently had the greatest proportion of occupied housing units with conditions of overcrowding. In 1950, 25.0 percent of the occupied housing units in Area V were overcrowded, compared to 16.5 percent in 1960, and 9.9 percent in 1970. Of the five health services areas, the smallest proportion of overcrowding has existed in Area I, which had 9.3 percent in 1960 and 6.0 percent in 1970.

Health Implications of Economic Characteristics and Trends

The major change that has occurred in Missouri's employment structure consists of an increased dependence on the commercial and service industries. The effect of this shift in employment has been considerable changes in the residential location and mobility, and the physical and social environments of a large portion of the population in the state. Increases in mental health disorders and hypertension are directly related to these changes.

The increased concentrations of low-income populations in the urban centers of the state, which is also related to the changes in the employment structure, has resulted in the conversion of old, single-family housing into multi-family, to meet the increased demand for low income housing. Continued increases in the populations below or near the poverty level causes overcrowding in households, substandard housing, and associated unsanitary living conditions to increase. As these conditions increase, the diseases associated with poverty, such as disabling chronic conditions, TB, and heart disease, also increase.

VITAL STATISTICSLive Birth and Death Rates

Figure II-GDS-2 shows the trends in birth and death rates in Missouri from 1910 to 1970. During this period the death rate has declined from 13 per 1,000 population to the 1970 rate of 11.0 per 1,000 population. During the same period, the birth rate has gone through a cycle; and although it hasn't reached the level that it is projected to have been before 1900, it is above the 1910 level. Although the birth rate increased slightly from 1969 to 1970, it has decreased from 1971 to 1975, and continued the downward trend that began in 1960. In fact, the birth rates in Missouri in 1973, 1974, and 1975, of 14.4, 14.5, and 14.4, respectively, were all lower than the previous lowest point in the cycle of 14.7 in 1936. This trend occurred in spite of the fact that the number of women of childbearing ages was higher due to the higher birth rates in the 1940's and 1950's. The result of this trend has been a significant decrease in the population growth rate, which points to the need for a cautious approach to health care facility expansion, especially obstetric and pediatric services.

Infant Death Rates

Figure II-GDS-3 depicts the trend in infant death rates by race in Missouri from 1932 to 1970. The race differentiation in the infant death rate shows the non-white rate remaining higher than the white rate, although both rates seem to be decreasing at the same proportion. This decrease in the infant death rate has a great impact on the aging of the population. The first year of life is the most vulnerable portion of the life cycle, and a decrease in infant mortality adds a larger population to the total average length of life. For further analysis of infant mortality refer to Chapter II, Health Status, and Chapter III, Diagnosis and Treatment, Maternal and Infant Health.

Mortality Rates for the Five Leading Causes of Death

Heart disease is the number 1 killer of Missourians and has had the highest age-adjusted death rate* of all causes since 1911 when the state started keeping vital records. Cancer, stroke (cerebrovascular disease), and accidents have followed in that order during the last 20 years. The fifth leading cause of death is now influenza/pneumonia (acute respiratory disease).

Infectious disease mortality declined dramatically between 1911 and 1972 as the age-adjusted death rate from this cause dropped from 300 to only 7.5 deaths per 100,000 population. Figure II-GDS-4 shows this de-

*An age-adjusted death rate is one that has been adjusted to a standard population in order to take into account differences in age composition. The death rates stated in this section and shown by Figure II-GDS-4 have been adjusted to the 1970 census population in Missouri.

LIVE BIRTH AND DEATH RATES 1911-1970
 (per 1,000 population)

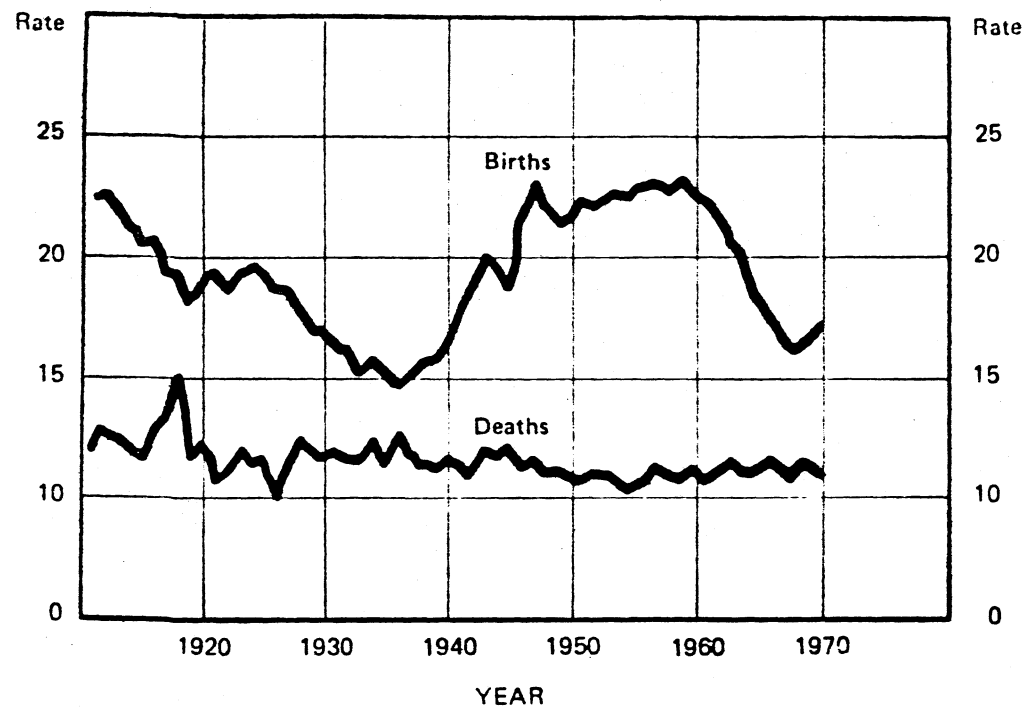
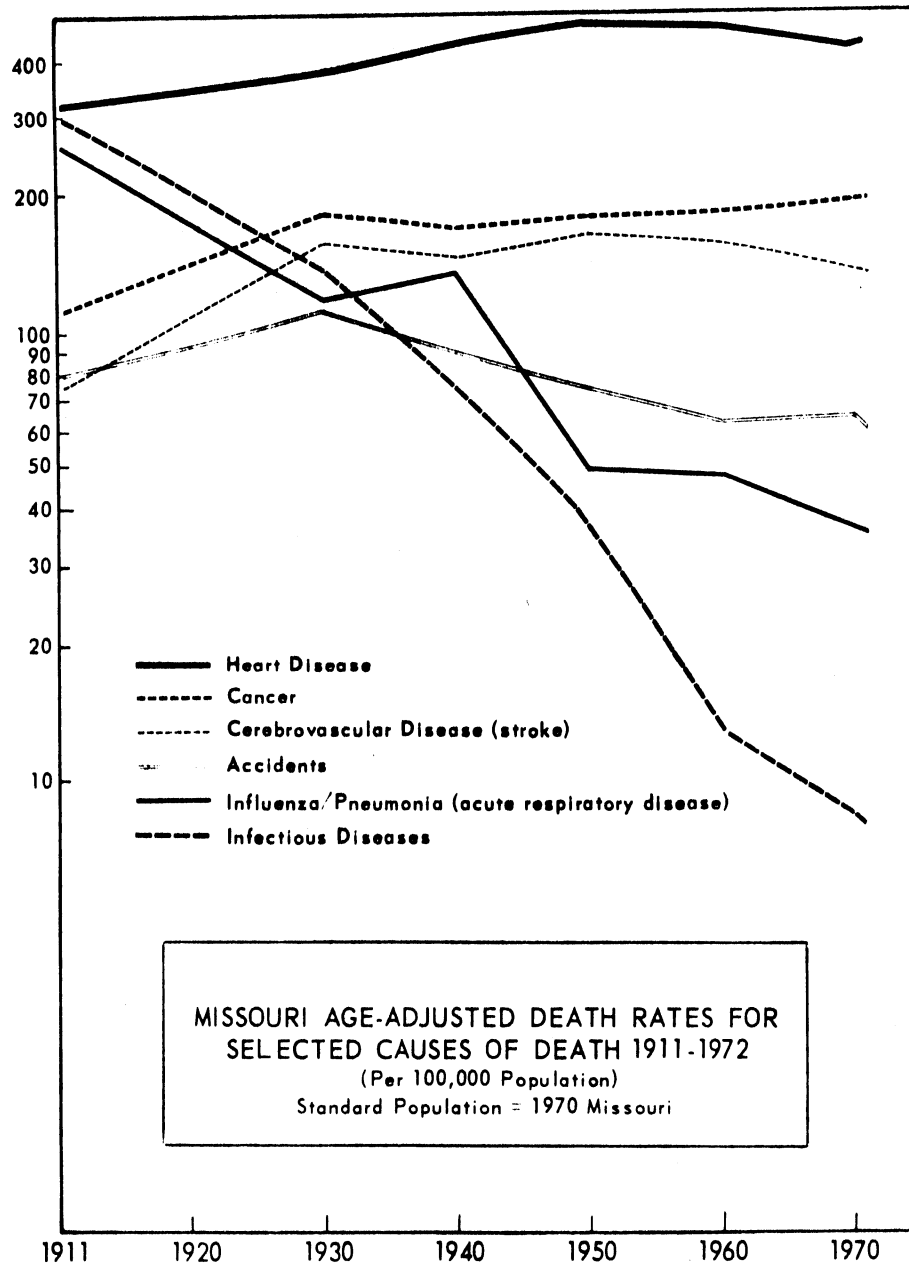


FIGURE II-CDS-2

Source: Missouri State Board of Health, Vital Statistics, 1911-1934 and 1937-1944; Division of Health of Missouri, Vital Statistics Reports, 1945-date; Special Reports of the United States Bureau of the Census, 1935-36. Population estimates 1911 to 1950 taken from United States Bureau of the Census Release, Series P-25, No. 139, June 27, 1956; 1951-1959 and 1961-date as computed by the Division of Health of Missouri; 1960 and 1970, taken from the United States Census of Population. Recorded data 1911 to 1944 and Resident data 1945 to date.

Year	Live Births	Deaths	Year	Live Births	Deaths	Year	Live Births	Deaths	Year	Live Births	Deaths
1911	22.3	13.1	1926	18.7	10.0	1941	17.4	11.4	1956	23.1	10.7
1912	22.6	12.6	1927	18.6	11.4	1942	19.0	11.0	1957	23.1	11.3
1913	22.1	12.4	1928	17.6	12.6	1943	20.2	12.0	1958	22.8	11.0
1914	21.3	12.0	1929	16.8	12.2	1944	19.7	11.9	1959	23.3	11.0
1915	20.5	11.7	1930	17.0	11.8	1945	18.7	12.1	1960	22.6	11.2
1916	20.8	12.7	1931	16.2	11.9	1946	21.5	11.3	1961	22.3	10.8
1917	19.3	13.1	1932	16.0	11.7	1947	23.4	11.6	1962	21.3	11.1
1918	19.2	15.6	1933	15.3	11.5	1948	22.1	11.1	1963	20.4	11.4
1919	18.2	11.7	1934	15.9	12.3	1949	21.5	11.1	1964	19.8	11.1
1920	19.2	12.5	1935	15.1	11.4	1950	21.6	11.0	1965	18.1	11.2
1921	19.5	10.6	1936	14.7	12.8	1951	22.5	11.0	1966	17.4	11.5
1922	18.7	11.2	1937	15.1	11.9	1952	22.4	11.2	1967	16.6	11.2
1923	19.3	12.1	1938	15.7	11.3	1953	22.5	11.1	1968	16.4	11.5
1924	19.7	11.5	1939	15.8	11.3	1954	22.8	10.7	1969	16.9	11.3
1925	19.4	11.7	1940	16.5	11.6	1955	22.7	10.4	1970	17.2	11.0

FIGURE II-GDS-3



MISSOURI AGE-ADJUSTED DEATH RATES FOR
SELECTED CAUSES OF DEATH 1911-1972
(Per 1,000 Population)
Standard Population = 1970 Missouri

Source: Missouri Center for Health Statistics, Missouri Monthly Vital Statistics, Vol. 8, No. 4, June, 1974.

cline and the mortality trends, 1911-1972 for the current five leading causes of death. Sharp decreases also are shown for influenza/pneumonia mortality, which fell from 254 deaths per 100,000 population in 1911 to just 34.6 in 1972. At the beginning of this time period, influenza/pneumonia and infectious disease accounted for more than one-third of all deaths in Missouri, as compared with the present when these diseases cause fewer than one in 25 deaths.

The age-adjusted death rate trends of heart disease, cancer, stroke and accidents feature less dramatic changes than those for the infectious and acute respiratory diseases. These four leading causes, however, have increasingly represented a larger proportion of total deaths. In 1972, 73 percent of all deaths resulted from either heart disease, cancer, stroke, or accidents, as compared with just 23 percent in 1911. This large increase reflects a gradual aging of the population as well as the upward trends in the age-adjusted death rates for each of these causes except accidents.

Persons aged 65 and over accounted for 76 percent of the deaths during 1972 caused by heart disease, cancer, and stroke, diseases which primarily affect the elderly. The percentage of the Missouri population aged 65 and over has grown steadily from 4.6 in 1911 to 12.0 percent in 1970, thus contributing to the increases in mortality from the state's three leading causes of death.

Between 1911 and 1950, the age-adjusted death rates for the current three leading causes of death all increased substantially: heart disease went from 313.1 deaths per 100,000 population to 477.6, a 53 percent rise; cancer increased 58 percent, or from 111.3 to 176.0 deaths per 100,000 and stroke jumped from a rate of 75.7 to 160.4 or 112 percent increase. Since 1950, however, all of the five leading causes except cancer have declined in rate: heart disease - 12 percent; stroke - 19 percent; accidents - 20 percent; and influenza/pneumonia - 27 percent. The cancer age-adjusted mortality rate increased from 176.0 in 1950 to 189.5 deaths per 100,000 population in 1972.

The 20 percent decline in the overall accidental death rate has been accomplished despite an increase in motor vehicle deaths. While the motor vehicle rate increased from 24.1 to 30.4 deaths per 100,000 population between 1950 and 1972, the rate for all other accidental deaths declined from 48.4 to 27.8.

When interpreting Figure II-GDS-4, it should be noted that changes in the International Classification of Diseases have affected the rates of certain causes of death during the years represented.

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CHAPTER III: HEALTH SYSTEMS ANALYSIS

INTRODUCTION

USERS GUIDE TO CHAPTER III: HEALTH SYSTEM

Chapter III has been organized into eight primary categories: 1) Health Promotion; 2) Health Protection; 3) Individual Prevention, Detection, and Referral; 4) Diagnosis and Treatment; 5) Maintenance; 6) Rehabilitation and Habilitation; 7) Ancillary Services; and 8) Systems Development. Within each category is found an analyses specific to the Users Guide to the 1980 Missouri State Health Plan pages xiii through xviii. Each of the components within these categories are addressed within the format as follows:

The Plan Development Committee identifies issues to be considered in the plan development process. This decision is reviewed by the Missouri Health Coordinating Council. The Committee receives input from many sources. The primary sources are:

- Health Systems Plans;
- National Priorities;
- State Needs and Priorities;
- Task Force Recommendations;
- Professional and Consumer Groups; and
- Analysis of health status and health care information specific to the State of Missouri.

Each issue is then categorized into one of the above eight service categories and assigned to an appropriate sub-committee by the Plan Development Committee. A special group or task force may also be established if appropriate. The sub-committee, with agency staff assistance, then develops a planning component using a standard method of analysis as follows:

For those components developed prior to adoption of the Revised State Health Plan Format (September, 1980), the following method of analysis is applicable:

- DESIRED LEVELS

The desired health system serving the area's population is described by establishing indicators and goal levels, based on the identified health status problems.

- COMPARATIVE ANALYSIS

This section includes a comparative analysis of the present health system to alternative desired health systems and weighs the effects of alternative health system intervention strategies on health status.

- PROBLEM DESCRIPTION

This section describes and evaluates the magnitude and importance of health system changes identified in the comparative analysis.

(Services selected for consideration should be consistent with local, State, and National needs and priorities.)

GOALS, OBJECTIVES, AND ACTIONS

This section should articulate the area's health status goals and objectives and recommended actions and should: 1) properly reflect the priority problems identified by the analysis; 2) be evaluated in terms of relative importance and urgency establishing alternatives for long-range actions; 3) outline the preferred actions necessary for achievement of both health status goals and health system goals and objectives; and 4) outline the necessary resource requirements to achieve the recommended actions in (3) above.

For those components developed after adoption of the Revised State Health Plan Format (September, 1980), the following method of analysis is applicable.

- ISSUE IDENTIFICATION

This section determines direct linkages between health status problems and the magnitude of their impact on elements of the health care delivery system and should determine "non-health system" elements which have a direct bearing on the health care system.

- ISSUE ANALYSIS

This section describes and evaluates the present health care system and determines the magnitude and importance of health system changes and/or problems identified in the issue identification phase.

- RECOMMENDATIONS

This section weights the effects of alternative health system intervention strategies on the identified health status problems and recommends appropriate action.

- GOALS, OBJECTIVES, AND ACTIONS

This section articulates the State's Health System Goals and Objectives and Recommended Actions and should: 1) properly reflect the priority health status/health system problems identified by the analysis; 2) be evaluated in terms of relative importance and urgency establishing alternatives for long-range actions; 3) outline the preferred actions necessary for achievement of the health system goals and objectives; and 4) outline the necessary resource requirements to achieve the recommended actions in (3) above.

The analysis within each level of the preceding component format is also, where possible, broken down by health system characteristics: availability, accessibility, cost, acceptability, continuity, and quality. There are certain exceptions to the use of these characteristics since they are not readily adapted to evaluation of non-medical interventions. However, they lend themselves well to discussion of direct health services. Service settings (inpatient, ambulatory, residential, and non-residential) should also be considered but are not mandatory for the analysis.

HEALTH PROMOTION

"Services which encourage healthy lifestyles."

INTRODUCTION

Historically, health has been the responsibility of the individual. However, as knowledge of the human body, disease mechanisms, and medical practice increased, people became more and more dependent upon medical intervention. Concomitantly, decreasing emphasis was placed on individual behavior and individual responsibility. Despite the vast increase in health care expenditures during the last 15 years and the improved accessibility to medical care for most Americans, the life expectancy of the 45 year old male has increased only about four years since 1900.¹ Analysis of the principal causes of morbidity and mortality have revealed that "environmental factors and lifestyle contributed so greatly as to constitute the key to effective control."² Recent studies show that specific aspects of lifestyle, such as diet, physical activity, tobacco smoking (especially cigarette smoking), stress, and consumption of alcohol have important influences on morbidity and mortality.³ To the extent that these behaviors can be modified, the prevalence of the current leading causes of death can be reduced, or at least their onset and consequences delayed. The modification of lifestyle can enable individuals to reduce the costs of their health care, thereby reducing the overall expenditures on health care in the United States. As a result, the concept of individual responsibility in the area of health is gaining reacceptance.

In order for individuals to assume responsibility and accountability for their own health, they must be provided with the necessary tools to enable them to make intelligent, rational decisions concerning healthful behavior. Resources, opportunities, and incentives must lead to appropriate modifications in lifestyle and behavior. A major difficulty encountered by health care professionals in attempting to improve the health of the population is that intervention strategies are not within the realm of traditional medicine; traditional medicine needs to be supplemented in assisting individuals to assure more responsibility for their own health.

While there are many definitions of health promotion activities, a theme common to all is that health promotion activities should motivate the adoption of a personal lifestyle which minimizes risks of avoidable disease, disability, premature mortality, and assists individuals in making appropriate use of the health care system.

The utilization of health promotion activities to modify behavior is thought to be justified on the grounds that "good" health requires individual knowledge, individual responsibility, and individual participation in making rational, informed choices about one's lifestyle. To provide information about illness and disease prevention is not sufficient; people must be given proper incentives for translating this knowledge into practice. The ultimate objective of health promotion activities must be a favorable alteration in the manner in which individuals, communities, and institutions act with respect to health-related activities.

The overall health status of the population is determined not only by the availability of medical services, but also by the environment (physical, recreational, home, work), genetics, and lifestyles. Given past accomplishments in public health and types of chronic diseases prevalent in society today, it is apparent that the best hope of achieving any significant increase in life expectancy of the population (outside of a major breakthrough in the area of cancer research) is through the prevention of illness and accidents. It is unrealistic to expect the health care system to overcome the effects of years of health-damaging activities; the modification of lifestyle to include sound health behavior will have a greater impact on the overall health status of the population than will the provision of more sophisticated medical technology.⁴ Efforts to overcome inequities in the distribution of medical services within the current health care system and medical research must be continued; however, in the long run the greatest benefits will likely accrue from successful efforts in maintaining the viability of our environment and changing the lifestyles of the population.⁵

Another important goal of health promotion activities is to reduce demand upon the health care delivery system by preventing illness. Such a reduction in demand may also occur because of improved utilization of the system by informed consumers, e.g., less expensive means may be substituted for more expensive measures.

While specific morbidity and/or mortality indicators have been developed for identified problems, a basic premise of the health promotion section is that greater attention must be focused on preventing or modifying the underlying causes of disease rather than on the diseases themselves. While one may not be able to measure directly the impact of an intervention strategy on an underlying cause, it is reasonable to presume that any reduction in morbidity and/or mortality which follows the implementation of such a strategy is, at least in part, attributable to that strategy. It must be recognized, however, that the results of many of the intervention strategies cannot be measured in the short run. For example, school health programs to encourage young children to alter their lifestyles in order to reduce the risk of heart disease cannot be evaluated until these youngsters reach adulthood.

A. LIFESTYLE DEVELOPMENT

COMMUNITY HEALTH EDUCATION

Issue Identification

Despite advances in medical science and medical technology, despite the rise in medical care expenditures, and despite the increase in resources allocated to health, the health status of Missouri residents remains less than optimal.⁶ Over the past five years, mortality rates for specific population groups have worsened, while, for others, health status may have improved, but failed to keep pace with National rates. In A New Perspective on the Health of Canadians, Marc LaLonde stated that all causes of death and disease have four contributing elements:

1. behavioral factors or unhealthy lifestyles;
2. environmental factors;
3. human biological factors; and
4. inadequacies in the existing health care system.⁷

Among the Nation's ten leading causes of death in 1976, approximately 50 percent of the deaths were due to unhealthy behavior or lifestyles, 20 percent to environmental factors, 20 percent to human biological factors, and 10 percent to inadequacies in medical care.⁸ It becomes evident that environment, individual behavior, and lifestyles are stronger determinants of the health status of the population than medical care.

Since the early 1900's, the pattern of disease in the U.S. has shifted from a preponderance of infectious and communicable diseases to one of chronic illness. In 1979, 75 percent of all deaths in Missouri were due to degenerative diseases such as heart disease, stroke, and cancer.⁹ All Missourians at birth, because of genetic and/or sociodemographic variables, have some chance of developing health problems. However, disease and disability are not inevitable events to be experienced equally by all. Most debilitating illnesses are related to a number of factors, such as cigarette smoking, poor dietary habits and severe emotional stress. Moreover, the combined potential for harm of many risk factors is more than the sum of their individual potentials.

The relationship among death rates, health status, and lifestyle is clear. The majority of premature deaths, illnesses, and disabilities are related primarily to lifestyles. Of these major risk factors, those most responsible are cigarette smoking, alcohol and drugs, accidents, and occupational risks. Cigarette smoking is the single most important preventable cause of death. Besides being a major cause of cancer, it is a significant factor in increasing the risk for heart attacks, even in the absence of other associated risk

factors such as high blood pressure and elevated serum cholesterol. The recent decline in deaths due to heart disease occurred during the same period of time as the decline in the prevalence of (1) cigarette smoking, (2) high blood pressure, and (3) elevated serum cholesterol.

Accidents rank as the most frequent cause of death from age 1 until age 35. For all age groups combined, accidents were listed as the fourth leading cause of death in Missouri. Motor vehicle accidents account for the majority of deaths and disabling injuries listed as accidental. Firearms were second only to motor vehicles as a cause of fatal accidental death injury. Falls, burns, poisoning, adverse drug reactions, and recreational accidents also account for a significant share of accident related deaths.¹⁰

Alcohol and drugs exact a substantial toll of premature deaths and disabilities. Alcohol is a factor in more than a third of all deaths nationally. Alcohol accounts for 35 percent of deaths due to accidents, 60 percent of all homicides, and 30 percent of all suicides. There is also a high correlation between the use of alcohol and child abuse, family violence, and rape. The direct medical costs of the effects of alcohol misuse are estimated at 12.74 billion dollars annually.¹¹

Each year, 100,000 Americans die from occupational illnesses and almost 400,000 new cases of occupational disease are recognized, according to the estimates of the National Institute for Occupational Safety and Health. Occupational exposure to toxic chemicals--as well as such physical hazards such as excessive noise and radiation--can produce chronic lung disease, cancer, degenerative diseases, birth defects, and genetic changes that may be transmitted to future generations.

During the last 35 years, little emphasis has been placed on health promotion and disease prevention. This is due in part to the current health care model which focuses on sickness care and has many characteristics which are incompatible with a wholistic health care system. Traditional medical care, curative medicine, begins with the sick and seeks to keep them alive or make them well. Disease prevention, preventive medicine, begins with a threat to health and seeks to protect people. Health promotion through community health education begins with people who are basically healthy and seeks to develop community and individual measures that can maintain and enhance the state of well being. Medical care, disease prevention, and health promotion can be complementary. Any effective health strategy must encompass all three.

Issue Analysis

Traditionally, Community Health Education has been provided by local health departments and voluntary health agencies. Both focused

primarily on specific issues or diseases rather than on a more comprehensive or wholistic approach to health education. Due to a renewed interest in prevention, health education, and consumer information, a large variety of programs calling themselves, or that could be identified as, "health education" are being developed and implemented. A significant number of these programs do not easily fit traditional classifications. The following analysis is based on the institutional setting of the program and/or the primary target population.

Public Health Departments

By statute, the Missouri Division of Health has the responsibility of protecting the health of Missourians. No other agencies currently have this legislated activity. In order to provide community health education, the Division of Health works through a network of Public Health Departments and the Bureau of Health Education.

The network of Public Health Departments consists of the State central office, District offices, and local health offices. The roles of these various units are as follows:

Central Office

The activities at the central office related to public health are those of statewide planning, counseling, and financing. There are certain services rendered by the Division of Health which are so technical or specialized in nature that they cannot be decentralized to districts or local units. The activities and programs of the central office are carried out by their six sections (Disease Control, Local Health Services, Hospital and Technical Services, Laboratory Services, State Center for Health Statistics, and Medical Care).

District Office

The district boundaries and offices are shown on Map A-LD-1 in the appendix. The staff normally consists of a health officer, nurses, health educators, health program representatives, sanitarians, and an administrative and clerical staff. Districts 4 and 5 also have public health laboratories. Basically, the district offices serve to support and supplement the work of the local health units.

Local Health Units

Under State law, a county may establish either a mill tax supported health department, which is governed by a board elected by the voters, or it may establish a county court-supported health unit or nursing service. City governments may also establish health departments. Units at the local level are responsible for working with both public and private

health service providers in the enforcement of State laws at the local level. Certain environmental health activities are performed by local units that are staffed with qualified environmental personnel. Local units also assume responsibility for promoting the health of the school children, developing well-baby clinics, maternity clinics, or such public health facilities as may, in the opinion of the citizens of that county, be needed to protect the health of its people.

Presently, nine Missouri counties do not have any local health units. Services for these counties are provided by the Division of Health's District offices. Out of Missouri's 114 counties and the City of St. Louis, 66 county public health units do not have any professional manpower beyond a basic nursing staff. Of those 66 units, 21 employ one nurse and possibly some support staff. The majority of the local public health units must rely on the District office for health education and other services.

The current number of health educators employed at the District offices, as well as those in the City of St. Louis and Kansas City, is below the standard of one health educator for every 100,000 population, recommended by the American Public Health Association. Due to the shortage of health educators, most of the community education is provided by public health nurses. Approximately 90 percent of the nurses were trained in associate degree programs (two years) or in three year diploma programs. The remaining 10 percent of public health nurses have received a baccalaureate degree. In general, the baccalaureate programs are the only ones that have fully developed community health education components. The other nursing programs are illness and clinical-skill oriented.

The Bureau of Health Education primarily focuses on improving lifestyles in order to reduce the risk of accidents, illness, and premature death. In order to achieve this goal the Division of Health provides various health promotion and prevention programs for the residents of Missouri.¹² The programs are designed for age specific populations. These age groups are based on the principal stages of life: infancy, childhood, adolescence and young adulthood, adulthood, and older adulthood. In addition to programs aimed at the promotion of wellness, the Bureau of Health Education also provides educational opportunities for health educators as well as opportunities for research and evaluation.

Voluntary Associations

The first voluntary health agency in our Nation was the Anti-tuberculosis Society of Philadelphia, established in 1892; today, there are more than 100,000 such groups at local, State, and National levels. There are over 70 National voluntary health agencies affiliated with the National Health Council, many of which have chapters in the State of Missouri. Education is the single most important activity of these agencies. Traditionally, most of the health education in Missouri has been provided by such agencies.

While all of these organizations address themselves to reducing the causes of morbidity and mortality, there is some degree of specialization. There are basically five types of voluntary health organizations. They are as follows:

1. Organizations that are concerned with specific diseases such as the American Cancer Society and the American Diabetes Association.
2. Agencies concerned with specific organs or structures of the body. The American Lung Association is an example.
3. Agencies that are concerned with the health and welfare of specific groups. Among them are the Child Welfare League of America and the Family Service Association of America.
4. Organizations concerned with particular aspects of health and welfare, such as the National Safety Council, National Council on Drug Abuse and the National Association for Mental Health.
5. Agencies that coordinate activities funding various other groups. The United Way and the Community Chest are examples of this classification. There are now more than 100 of these coordinating bodies in Missouri.

In addition to the primary function of public education, these voluntary organizations have several other activities. Among these activities is exploring unmet community needs and methods for addressing these needs. This includes demonstration projects for improving public health and the promotion of health-related legislation. Voluntary groups have provided leadership in working on such legislation. Recently, there has been a trend towards planning and coordination of services in order to avoid overlap and unnecessary duplication of programs.

Business and Industry

Corporations and unions are becoming more aware of the toll that preventable diseases exact in terms of increased absenteeism, decreased productivity, higher health and disability insurance costs, and premature death. In response to this situation, companies and unions alike are beginning to develop programs to improve the health of their respective employees and members. These health promotion programs cover one or more of the following areas: smoking cessation, hypertension control, alcoholism, early identification and treatment, weight control and nutrition, fitness, cancer risk reduction, accident reduction, stress management, and cardiopulmonary resuscitation.

Successful programs are usually based on three principles: support and cooperation of management, voluntary employee participation, and

confidentiality. While these principles are necessary to the success of the program there are certain essential components in each of these business-based programs, regardless of focus, e.g., hypertension control. The common features are: 1) planning-space, scheduling, education; 2) recruitment and training of staff; 3) pre-screening education of employees; 4) screening, involving a brief physical exam and exit interview; 5) intervention utilizing small groups, behavior modification principles, peer support, and self-monitoring; and 6) maintenance, follow-up, and evaluation.

Health Care Facilities

Many hospitals, as well as other health care facilities, are moving away from the role of "the doctor's workshop" toward one of a "community health center." In this new role, hospitals are engaged in both patient and community education activities. These programs are designed to provide a continuum of educational services for the inpatient, outpatient, and asymptomatic health care consumer. In many communities, hospitals and other care centers provide the only source of community health education and the necessary resources.

Media Program

The potential of the media for community and consumer education appears to be great. "A 1971 Harris poll, commissioned by the Blue Cross Association, found that 29 percent of the American people get most of their health and medical information from TV medical news. The media, as sources of health information, exceeded physicians, who were named by only 57 percent."¹³

While the potential is there, the results of the impact that the media, has had, especially television, are debatable. Studies concerning television and social behavior, while not concluding that TV was a principal cause of violence, stated that it was an important contributing factor.¹⁴ Furthermore, television has had a bad reputation regarding health information due to its relationship with the advertising industry. "Deceptive, classic, and misleading information are an integral fact of advertising and a negative influence on health consumers and health providers alike."¹⁵

The positive potential of television, as well as other media, is receiving more attention. Advertising codes have been adopted for children's TV. In addition, anti-smoking ads have demonstrated the development of effective health material.

SCHOOL HEALTH EDUCATION

Issue Identification

Many of the antecedents associated with the four leading causes of death in Missouri in 1979 were developed during childhood. While, chronic diseases are not among the major causes of death for school age children the lifestyles and behavior patterns which are shaped during these years may determine later susceptibility to chronic diseases. As many as 40 percent of youths ages 11 to 14 are estimated to have already present one or more of the risk factors associated with heart disease: overweight, high blood pressure, high blood cholesterol, cigarette smoking, lack of exercise, or diabetes.¹⁶

Accidents, homicides, and suicides account for 75 percent of all deaths in the age group 5 to 24.¹⁷ Responsibility has been attributed to behavior patterns, characterized by greater risk-taking. Other principal threats to health for the age group 15 to 24 are alcohol and drug abuse, unwanted pregnancies and sexually transmissible diseases.¹⁸

Alcohol abuse represents a serious threat to the health of our youth. Drinking among youth has risen steadily since 1936, particularly at the high school level. It is estimated that 3.3 million youths, 14 to 17 years old, experience problems from drinking.¹⁹ The age where young people begin drinking has also decreased from 13.4 years in 1966 to 12.6 years in 1978.²⁰

Issue Analysis

The effects of adolescent pregnancy, sexually transmissible diseases, mental illness, suicide, and homicide point out the failure to help young people to acquire the skills and information needed to solve problems and make sound decisions during years of rapid change.²¹ According to the American Public Health Association, the school, as a social institution provides an educational setting in which the total health of the child during the impressionable years is of priority concern. Pre-adolescents are at a threshold for establishing health related behavior and lifestyles.

Currently, there is no clear picture of the extent or nature of school health education in Missouri's 557 school districts. Surveys of these districts have been successful only in identifying what the superintendents perceived as being taught in the school system. To some extent, health is taught in most districts. However, with the exception of a few districts with comprehensive school health education curriculum, there is no planned or sequential health instruction. Therefore, both the quantity and quality of health education efforts vary widely across the State's school districts.

Missouri's school health education programs are faced with four major constraints: (1) a tradition of low visibility and low priority, (2) a narrow definition of the appropriate content and jurisdiction for health education efforts, (3) a shortage of adequately trained health educators, and (4) a lack of funding and encouragement from the State.

School administrators and school boards are frequently unaware of the importance of health education, and there is no enforcement power within the system to ensure that health education is actually provided. Health education is usually subsumed within departments such as home economics, biology, or physical education. It is often not separately delineated in school budgets. Therefore, realistic assessments of the resources allocated for school health education are not available.

The content of health education is often limited to discussion of hygiene and/or moralistic treatment of sex, drugs and alcohol. Recently, there has been a trend to treat healthful behavior as a positive force. However, the shortcomings of health education curricula are still substantial. Open discussions of sexuality and substance abuse, subjects of concern to many students, are often barred from the classroom by political constraints and tradition. Discussions of how to use the fragmented health care delivery system are usually not included at all.

RECOMMENDATIONS

Health promotion programs should be established at occupational settings. These programs should offer activities and services to promote healthier lifestyles as well as information concerning occupational hazards. Health promotion programs should be designed with a target group in mind. Health problems occurring in one occupation will vary from those in others.

There should be greater coordination among the various voluntary agencies and public health departments in order to avoid duplication. Since diseases which are focused on by various agencies have common antecedents, pooling resources and coordinating activities would increase the target audience as well as the impact of the campaigns.

Health education material and campaigns should be developed for specific risk groups. This material should not only contain health information, but should motivate and assist people to adopt healthful practices and lifestyles and should advocate social and environmental changes that are needed to facilitate healthful living conditions and behavior. Hospitals should assume major responsibility for providing a continuum of Community Education services.

Development of coordinated, comprehensive school health education programs should be encouraged through the use of State and local funds. Funding is needed in three areas: developing and evaluating on both the State and local levels of school health education curricula, training teachers in health education, and promotion of school health education.

The State's Department of Elementary and Secondary Education should assume a more active role in encouraging school districts to implement a health education program in kindergarten through twelfth grade. This could be achieved by including comprehensive school health education in the classification and accreditation standards of the Department of Elementary and Secondary Education. In addition, the Department could serve as a resource center for the various districts.

Provide an opportunity for local districts and parent groups to assist in the development of health education curricula.

GOALS, OBJECTIVES, AND RECOMMENDED ACTIONS

GOAL: TO ENSURE THAT THE CORE PUBLIC HEALTH, ENVIRONMENTAL, AND HEALTH EDUCATION PROGRAMS AND SERVICES ARE AVAILABLE AND ACCESSIBLE TO RESIDENTS OF EVERY COUNTY IN MISSOURI.

OBJECTIVE 1: By 1981, counties should 1) examine their need to increase the staff of their units so that needed services might be initiated or expanded, or 2) examine their area for sources to meet needs, whichever is more appropriate.

Recommended Action 1: Among many possible resources available, the following have been initially identified:

1. The public health units should contact the Regional Directors of the Division of Alcoholism and Drug Abuse regarding: a) alcoholism counseling services in their counties; b) emergency medical service training available through the Division; and c) alcohol and drug abuse training;
2. The Prevention Network (Division of Alcoholism and Drug Abuse) should be included as a resource for programs which can provide needed services; and
3. The Division funded prevention services in each of the Department of Mental Health planning regions should be included as a resource for providing health education services and other experiential learning experiences, (medicine safety programs, healthy minds/healthy bodies, life safety skill courses, school information sessions on alcoholism).

OBJECTIVE 2: By 1982, there should be public health units in all Missouri counties.

OBJECTIVE 3: By 1983, the number of public health nurses in local units around the State should be increased by 10 percent.

OBJECTIVE 4: By 1983, the number of environmental sanitarians in local units around the State should be increased by 10 percent.

OBJECTIVE 5: By 1983, public health units in counties with over 25,000 population should provide all 19 services (either in-house or by referral) listed in Issue Analysis.

OBJECTIVE 6: By 1982, there should be one health educator and/or risk reduction or prevention program for each Regional Planning Commission area in Missouri.

GOAL: TO INCREASE COMMUNICATION AND COORDINATION AMONG PUBLIC AND VOLUNTARY HEALTH RELATED ASSOCIATIONS.

OBJECTIVE 1: Maintain and support the Statewide Comprehensive Health Education Coalition.

Recommended Action 1: Support and assist the Statewide Comprehensive Health Education Coalition's School Health Education Institute.

Recommended Action 2: Assist with and support a statewide needs assessment.

Recommended Action 3: Assist with and support a statewide resource inventory.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE PROVISION OF HEALTH PROMOTION SERVICES BY ALL EMPLOYERS AND UNIONS IN MISSOURI.

OBJECTIVE 1: By 1983, 10 percent of businesses and industries in Missouri should have developed health promotion programs for their employees at all levels.

Recommended Action 1: An evaluation should be made of the national programs that are already in existence to determine:

1. cost-effectiveness, and
2. percent of employees using the program.

Recommended Action 2: Health promotion models to meet the needs of various employers should be developed.

Recommended Action 3: A coalition of Missouri employers and employees interested in health promotion in business and industries should be formed.

Recommended Action 4: Each HSA in Missouri should organize a meeting of employers and unions in their area interested in increasing health promotion activities on the job.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY MOTIVATING POSITIVE HEALTH BEHAVIOR THROUGH THE MEDIA.

OBJECTIVE 1: By 1981, Missouri advertising industries and television should establish a council to provide leadership in developing accurate and socially responsible health education programming.

OBJECTIVE 2: By 1981, the Federal Communications Commission in cooperation with DHHS should develop standards for television programming and advertising on health.

The leadership of the television and advertising industries with the help of appropriate representatives of the public and health care sectors should also develop television as a major national resource for community health education.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE IMPLEMENTATION OF A COMPREHENSIVE SCHOOL HEALTH EDUCATION PROGRAM IN EVERY SCHOOL DISTRICT IN MISSOURI.

OBJECTIVE 1: By 1981, the Department of Elementary and Secondary Education should develop a strategy for implementing Comprehensive School Health Education.

Recommended Action 1: Comprehensive school health education should be included in the classification and accreditation standards of the Department of Elementary and Secondary Education. To quote from the Handbook of Classification and Accreditation of Public School Districts in Missouri, (p. 35, Curriculum - High Schools): "The curriculum shall provide opportunities for educational experiences which will enable each student to develop rational procedures for being a contributing member of our complex society . . . It shall stimulate the development of moral convictions and value competencies."

Recommended Action 2: Health Education guidelines should be developed by the State to be utilized in initiating, expanding, or improving local curricula to assist in the development of life-coping skills.

Recommended Action 3: A Guide for Developing a Comprehensive K-12 School Health Instruction Program should be utilized as the main reference in the further development of State guidelines.

Recommended Action 4: Twenty school districts (one in each Regional Planning Commission area) should be identified to act as model programs in the development of Comprehensive School Health Education.

Recommended Action 5: Developmental funds should be made available to several demonstration schools to assist in the development of a model health education curricula and implementation strategies.

OBJECTIVE 2: By 1983, the State Department of Elementary and Secondary Education with the assistance of the Division of Alcoholism and Drug Abuse and the Division of Health should establish as an ongoing program a resource center to support, assist, and evaluate local school programs. Minimally, the resource center should:

1. state that there should be an integrated comprehensive school health education program taught in grades kindergarten through twelve in every school district, and act as a resource for developing model comprehensive school health education programs;
2. develop criteria and standards for effective Comprehensive School Health Education;
3. provide for each school district to submit a written planned curriculum to them for review and approval;
4. provide information on and access to a central clearinghouse for educational literature, films, and other materials (housed in the Division of Health);
5. establish implementation strategies;
6. establish a review mechanism;
7. provide sufficient funding or assistance in locating funding sources; and
8. provide for monitoring and an adequate mechanism for evaluating each program reviewed.

OBJECTIVE 3: By 1983, each school district should have written a planned health education curriculum and implementation strategy which is in compliance with the State Department of Elementary and Secondary Education guidelines.

OBJECTIVE 4: By 1982, the Missouri Division of Health with the assistance of the Department of Mental Health (Division of Alcoholism and Drug Abuse) should establish a central reference and clearinghouse for school health literature, films, and other educational material.

Recommended Action 1: The Missouri Division of Health should act as a coordinator for the accumulation and distribution of health related material available for schools. Currently, there is no central point from which a school instructor can request health related materials; each topic must be obtained from separate sources.

Recommended Action 2: This central clearinghouse should be under the guidance of a health education specialist who would review the material and classify it by topic as well as by grade and/or maturation level.

OBJECTIVE 5: By 1981, the Department of Elementary and Secondary Education and the Department of Higher Education should develop in-service training programs for teachers in the area of health education.

OBJECTIVE 6: By 1983, the Missouri Division of Health, Department of Elementary and Secondary Education, and the Department of Mental Health in cooperation with schools should begin to offer school health education programs to reach other members of the community.

B. RISK AVOIDANCE

PATIENT EDUCATION

Issue Identification

In 1979, 80 percent of all deaths in Missouri were due to degenerative disease and accidents. In addition, between 1974 and 1976 an estimated 47 percent of the population of Missouri were limited in activity due to chronic conditions.²² Most of these illnesses and accidents contributing to high morbidity and mortality rates are related to several risk factors. It is the ability to control some of these risks that lies at the center of disease prevention and patient education.

Evidence of the effectiveness of patient education has been demonstrated in a report by Stanley G. Rosenbert, where a significant correlation was shown between the attainment in knowledge and the behavior of congestive heart failure patients. The report states that the experimental group (those who received educational support) had one-half as many readmissions as the control group (those who did not receive educational support). Also the experimental group had greater adherence to medical regimen than the control group. Other studies suggest that structured patient education has resulted in a significantly higher incidence of early discharge, reduction in emergency room admissions, decrease in absenteeism from work or school, and a lowering of medical costs. It is clear that even the most sophisticated and advanced health care system is ultimately dependent upon informed and motivated patients.

Issue Analysis

The present health care system is one that focuses primarily on sickness care as demonstrated by Ulrich and Kelley. "We wait until persons are sick and then give them sophisticated, expensive care. We discharge them and in many instances they get sick and need to be treated again. Such a cycle makes little sense."²³

It is also evident by this statement that the current system facilitates dependency rather than self-responsibility. Ulrich and Kelley further state that "good health is maintained by a continuum of effort and that treatment of acute and chronic illness is only one aspect of that effort. We must devote more attention to illness prevention, health maintenance, and disability adaptation."²⁴

While some studies are encouraging regarding the effectiveness of patient education, others point to critical areas in patient education. A large proportion of patient education is done on an informal one-to-one basis by physicians in their own offices. They are usually under severe time constraints and cannot provide either in-depth coverage of the instructional material or follow-up. The quality and content of patient education vary.

Structured classes and courses are becoming more common. Recently, a considerable body of literature on the subject of patient education has been produced. However, the majority of it is merely descriptive of individual programs with very little evaluation or possibility of replication.

While the fact that the American Hospital Association has taken a strong position in favor of patient education is very encouraging, few hospitals have established programs. The primary obstacles involve lack of funds, inadequate patient demand, and lack of support from the medical and nursing staff. In addition, the field of patient education lacks defined goals and methodologies for both tracking and evaluation, as well as reliable sources of financing.

The need for specific laws of responsibility for patient education is clear. So is the relationship between patient education and patient care. Therefore, State and local health departments, medical schools, and other health care institutions, both private and public, should provide the laws of responsibility in their communities. This responsibility should include providing a continuum of services designed for the inpatient, the outpatient, and the asymptomatic health care consumer. Hospitals and health care providers should be required to provide patient education as a condition of State licensing.

To stimulate positive institutional commitment to a patient education program, third-party payors should be encouraged to reimburse providers for the net cost of patient education. Coverage should include both outpatient and inpatient services.

OCCUPATIONAL HEALTH EDUCATION

Issue Identification

There are more than 1.85 million workers in Missouri.²⁵ Many of them are exposed to some kind of occupational health hazard: carcinogenic agents, pulmonary, or other physical disease incitant. In addition to these risks are those which can have adverse psychological effects such as noise, overcrowding, stress, or boredom. The Occupational Safety and Health Administration (OSHA) identifies two categories of risk: (1) safety hazards or dangerous physical conditions, e.g., inadequate guards on machines; and (2) health hazards or unsafe levels of toxic substances and harmful physical agents such as asbestos and carbon monoxide.

Occupational exposure to toxic chemicals, as well as other physical hazards, can produce chronic lung disease, cancer, and degenerative disease in a number of vital organ systems.

Adverse health effects are often linked with specific jobs. For example, working with asbestos without appropriate protection increases the incidence of a rare neoplasm that affects the lining of the abdomen and the lungs (mesothelioma), as well as lung cancer. These occupational exposures also may interact with other environmental hazards to create a synergistic effect as in the case of cigarette smoking asbestos workers. Hazards from industrial substance are not confined to the workplace. Toxic contaminants can be carried home on clothing and can threaten the health of families.

Issue Analysis

Despite known risks of serious disease or injury, most workers are unprotected. Nine out of ten industrial workers are not adequately protected from exposure to at least one of the 163 most common hazardous industrial chemicals, according to a recent survey of occupational hazard.²⁶ Most occupational hazards could be controlled through protection measures. It is demonstrated that health education can also have an effect on the general health of the employee.

In 1974 and 1975, OSHA allocated \$6.6 million for 15 grants related to health education projects that test models of occupational health education. These projects were to develop programs and curricula that could be replicated with adaption for use by specific groups. These projects focused on job safety, health topics, and program development.

Unions and employers have initiated their own education programs in areas related more to general health than to occupational safety.

Despite increasing research in occupational safety and health it is difficult to determine accurately the extent of occupational health problems and to measure the effectiveness of prevention efforts.

MOTIVATION TOWARD POSITIVE HEALTH BEHAVIOR

Issue Identification

At present, financial incentives for the implementation of health education programs are lacking.

Approximately 90 percent of our population have some type of insurance covering hospital care, and almost as many have coverage for physicians' services performed in hospitals. Relatively few people, however, are able to obtain insurance that pays for a substantial amount of preventive or ambulatory care - in other words, that rewards the physicians for keeping patients out of the hospital. Most medical insurance policies will pay 80 percent of all medical expenses over a certain minimum but do not cover periodic preventive services not related to a specific diagnosis or medical complaint.²⁷

So long as education was provided by doctors as a non-identifiable part of patient care, most third party payers did not question reimbursement. However, with health promotion programs being developed separately from therapeutic medicine, and other personnel becoming involved, costs are harder to "bury." Similar problems exist with Medicare and Medicaid. For Medicaid outpatients there seems to be some flexibility for reimbursement for educational activities. This does not hold true for Medicare and Medicaid inpatients. Under existing legislation, any activity labeled "preventive" is disallowed for reimbursement.

Issue Analysis

In August, 1974, the Blue Cross Association approved a position paper endorsing the concept of patient education urging health plans to reimburse hospitals for such activities. However, the development of these guidelines has not been followed with significant implementation.

Insurance companies are developing health education and health promotion programs for their own employees. In a few instances, insurance companies are trying to provide assistance to their subscribers through worksite risk reduction and health enhancement programs. Blue Cross of St. Louis is currently working on a pilot program of screening which they hope to offer to employees of participating subscribers.

Insurance companies are also taking advantage of individual risk differentials to provide favorable insurance rates to preferred risks. At least 20 insurance companies currently offer discounts on life insurance to non-smokers. Similar discounts have been extended to individual health policies as well as auto insurance policies. More discounts for those who are preferred risks based on personal health behaviors seem inevitable for both health and life insurance.

RECOMMENDATIONS

Research concerning occupational safety and health should be directed towards prevention and education. Emphasis should be given to critical areas such as the role of occupational exposures in producing birth defects and problems of women exposed to hazardous substances.

Private industry and labor should be encouraged to take responsibility for promoting health and safety in the workplace. In order to facilitate the development of statewide occupational health education programs, the State of Missouri should begin to develop and implement programs for its own employees.

Reward healthy behavior (smoking cessation, maintenance of proper weight, regular exercise, etc.) through reduced insurance premiums for individuals.

Encourage businesses and industries with group plans that have a substantial number of claims which result from lifestyle behavior to implement employee health education programs.

Institute reimbursement for services of less expensive health professionals, such as health educators, nurse practitioners, and physician assistants. Encourage the development of prepaid health care programs, such as health maintenance organizations, that reward healthy behavior through lower subscriber payments.

GOALS, OBJECTIVES, AND RECOMMENDED ACTIONS

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY PROVIDING FINANCIAL INCENTIVES FOR HEALTH PROMOTING BEHAVIOR.

OBJECTIVE 1: By 1983, third-party payors should develop incentive premium schedules for individuals who practice good health habits, and should develop reimbursement coverage for health promotion and health maintenance procedures performed on an outpatient basis.

Recommended Action 1: Coverage for patient and other health education, screenings, well-person maintenance programs, and early diagnosis and outpatient treatment should be increased. Concurrently, deductibles for inpatient care should be increased. Gradually, the ratio favoring inpatient care over other kinds of care should be reduced.

Recommended Action 2: Financial incentives for employee health promotion programs should be offered.

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement should include patient and other health education, screening, well-person maintenance, and early diagnosis and outpatient treatment.

OBJECTIVE 3: By 1982, tax incentives should be devoted for health promoting behavior.

Recommended Action 1: Evidence of a physical and dental examination within the last year should count as a tax exemption.

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¹⁸Healthy People, p. 43.

¹⁹DHEW Alcohol-Related Problems of Youth, (Washington: GPO, 1978) p. V. Hereafter cited as Alcohol-Related Problems of Youth.

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HEALTH PROTECTION

*"Services which improve
the environmental factors affecting health."*

INTRODUCTION

This chapter is titled Health Protection - health protection refers to measures which are taken to protect Missourians from environmental hazards. The key issue that must be dealt with is the definition of "health" and of "environment" in health planning.

Health is presently⁶ defined as a complete state of social, mental and physical well being. It is more qualitative than quantitative; something that ultimately each individual must define in personal terms, with regard to his/her lifestyle, values, capabilities, ambitions and goals. That each individual should assume responsibility for his/her health is one of the major premises of health education and promotion. However, exposures to harmful agents are not always perceived by the individual. The agents to which non-deliberate exposure occur have been termed contaminants; and include occupational, chemical, biological contaminants, pollution and radiation to mention a few. There are other agents to which exposure is deliberate. These are called consumables; among them are tobacco, drugs, cosmetics, and alcoholic beverages. Both kinds of exposures may affect an individual's health.

The term environment encompasses everything that characterizes an individual or population that is not genetically determined. There are different classifications of the environment: the physical environment; the occupational environment; and the social environment which is the culture, personal habits, and the lifestyle of each individual. The health issues and concerns of the social environment and the effect of consumable agents on health are dealt with in the Health Promotion section.

This chapter will illustrate, explain and present recommendations for maintaining a healthy physical environment (including air, water, noise pollution, and radiation safety), and relatively safe occupational and residential environments. The problems encountered in assuring biomedical and consumer product safety will be briefly mentioned. Finally, a special issues section will deal with certain aspects of health protection that are not within the exclusive limits of the above categories.

The role of the environment on health is complex. Many factors are involved, such as length and time of exposure, the dosage received, and individual susceptibility to the particular contaminant. An immediate result from exposure to health problems must not be assumed - often it takes years for a disease to evolve and become detectable, and for the mechanism which produced it to be understood. Exposure to other contaminants and changes in lifestyle help confound the issue. Furthermore, the environment is not static; it is dynamic, constantly changing and evolving either as a result of natural process or as a result of man-made changes. To better understand how the interrelationship between environment and health works, a few historical incidents will be presented.^{3, 6, 7}

One of the most famous famines in recent history was that brought about by the potato blight in Ireland in the mid-19th century. The

potato, a tuber originally found in the New World, has a natural parasitic fungus which does not affect it in anyway. The fungus followed the potato when it was transported to Europe. However, the relationship between the two did not remain. Different weather conditions caused the fungus to multiply more rapidly and destroy the potato. Proper farming techniques have been developed so that major crop destruction can be avoided. Unfortunately, the weather in 1845 in northern Ireland was so bad that even the best farming practices were not good enough to prevent disaster.⁵

That year it rained very heavily yielding moist conditions for the parasite fungus to grow in. This in turn made the potatoes much more susceptible to infections and caused them to rot in the ground and in storage. By this time the potato had become one of the main staple foods in the Irish diet. So much so that the population had increased dramatically during the first half of the century due to improved nutrition. Two years of ruined crops undid the Irish economy - it caused an acute food shortage, the result of which was that a million people died of starvation in a year. Those who survived became more susceptible to infection - e.g., tuberculosis. Half the remaining population was forced to emigrate to the USA bringing with them to this country a whole new lifestyle. They settled in the industrial cities of the Atlantic seaboard. From a rural existence, they found themselves in slum areas with accompanying pestilence, poor hygiene and high rates of infectious disease. The dramatic increase in tuberculosis mortality rates in the 1850's in several U.S. cities can be directly correlated with the massive influx of Irish immigrants.⁵

The impact of the altered balance between the potato and its fungus in a new ecological niche was devastating. Though the consequences were enormous, the cause and effect of the tragedy was relatively simple to understand and plan for. Not all such cases are as easy to understand.

Minamata is a small traditional fishing village in Japan. Until recently it was an unknown place, however certain events have now made it famous. The course of events that changed Minamata's history started in 1907 when the Chisso Corporation was allowed to establish a chemical fertilizer plant in Minamata. The town prospered and grew. As early as 1925 Chisso began paying small compensation to local fishermen who complained that the dumping of chemical wastes was killing off the fish in local waters. The production of compounds such as vinyl chloride and acetaldehyde began in the early thirties with large, steady increases in production continuing until the fifties.

Slowly, unusual occurrences in health and behavior of not only humans but also of their domestic pets appeared. The symptoms presented by the majority of victims were not characteristic of any disease known. They included deterioration of vision, loss of muscular control and coordination, mental confusion and slow and difficult speech. Eventually seizures and convulsions took over and killed the victim. Children were born with severe defects. Dr. Hosokawa, head of the local hospital, undertook an epidemiological investigation and

scientific experiments to investigate the cause of the disease that was afflicting the population in epidemic proportions. By 1956 he was able to conclude that the disease was caused by chemical poisoning from sea-food contaminated with methyl mercury. The methyl mercury in the plant's waste water passed into the bay where it was ingested by fish and shellfish in great concentrations without major side effects. Local people consumed this fish in great quantities and in this way they became slowly poisoned.

The Chisso Corporation unfortunately was unwilling to take responsibilities for the devastation it had caused. Court trials, lawsuits, government cooperation with the corporation went on for years as Chisso refused to compensate or pay the patients for medical treatment. Eventually in 1973, a court ruling found Chisso guilty and liable for negligence. The struggle still continues and the damage unfortunately can never truly be repaired. This story should serve as an example of the great inherent danger that is present when production of substances is allowed to go unchecked without prior establishment of their potential toxicity.

The two cases presented above are but a small sample of the known effects of either natural (Ireland) or man-made (Minamata) environmental disturbances on health. Not all interventions on the environment are detrimental. The list of examples is endless. Flouridation of water reduces caries, smog causes respiratory distress of many kinds, radiation produces excess leukemias and congenital defects, chemicals in the workplace can produce cancer and other crippling diseases.

The poisoning at Minamata illustrates another point. The effect of the mercury was slow in becoming noticeable. The symptoms were many and varied. Infectious diseases have been mostly conquered or controlled because an agent that produced a specific symptomatology was readily identified. This is not the case for most of the chronic diseases affecting mankind today - heart attacks, stroke, cancer, the major killers of today, do not have a simple casual factor. Rather, many factors such as individual susceptibility, the length and amount of exposure to one or several toxins, and lifestyle, will affect if and when an individual will develop a disease. Health professionals may not have the answers about the exact links between a risk factor and disease occurrence, but they do know that in the presence or absence of certain elements a disease is more or less likely to occur.

The role of health planning then is to assess the risks and benefits of controlling exposure to man-made pollutants. The focus of environmental health planning should be on preservation of the health status. Although planning for health care services is essential, planning for the reduction of environmental threats to health may be a more cost-effective approach to promoting health status goals.

National and state health policies must be directed towards increasing, rather than eroding the individual's opportunities, and sense of responsibility for defining and maintaining his/her health. Education will need to take on a more active role in helping achieve and establish health goals. Individuals must be educated so that they

can understand the intricacies and complexities involved in the maintenance of their health. Risk factors must be presented in such a way that the individual can make an intelligent, rational choice to continue exposure if that is an option. Prevention, by avoidance of known noxious consumable agents should be stressed as the most beneficial measure to ensure good health. The cost-effectiveness issues of such behaviors should also be illustrated. For pollutant, every effort must be made to regulate and control those with proven toxic effects; and rigorous testing must be performed before new pollutants are released in any form.⁸

A. ENVIRONMENTAL HEALTH MANAGEMENT

1a. Drinking Water and Water Pollution Control

Issue Identification

Water is necessary for life. It is used for navigation, as a coolant, cleanser and dilutant, for recreational purposes, as a food resource, as a means of power, as a container for nuisances, and, finally, as the once unlimited area for disposal of society's waste products. Water quality affects humans through their direct use of water.¹¹

Water quality is affected by temperature, the amount of dissolved oxygen present, the pH, light, flow of water, amount of silt, oil, major nutrients and contaminants.¹¹

Water is in short supply nationally because the amount of rain and snow basically remains constant but population and usage per person are both increasing sharply. Missouri has an adequate water supply presently, and does not have the water shortage problems other states have. However, Missourians should realize that this may be a potential problem. The population of the United States was 150 million in 1950. Today it is approximately 225 million and numbers continue to increase. Water usage in the United States is four times greater today than it was in 1900. Increased use is due to more bathrooms, garbage disposals, home laundries, lawn sprinklers, and agricultural irrigation. Industry has increased its water usage 13 times or 1,300 percent since 1900. It currently uses about 250 billion gallons per day. The total water usage in the United States is estimated at about 500 billion gallons per day.^{7, 11}

Given the potential shortage of water, reuse should be considered an alternative for industry. At this time, reuse may not be the best alternative for public drinking water. Water reuse is complicated by water pollution. Water is polluted by many sources and exists in many forms. It may appear as oil slicks, excess aquatic weeds and an increase in carp, sludge worms, and other forms of life which readily tolerate pollution. Water pollution is detrimental to health, recreation, aesthetics, commercial fishing, agriculture, industrial, municipal and private water supplies.

Drinking water treatment is decreasing the level of contaminants in the raw water source to residences, industries, and businesses and distributing potable water. Waste Water Treatment involves collecting water and decreasing the level of contaminants and discharge to a stream or for reuse. Public drinking water must be appraised from its point of origin, through treatment, distribution, and storage of the water. There must be a continuous evaluation of the physical, chemical, microbiological, and radiological qualities of the water as it flows from the homeowners water tap.

Sources and Types of Water Pollution

Natural water pollution is created through the silt that washes down along water beds due to rain or snow carrying dust, dust particles, and other materials into the water. Artificial pollution, until recently, was mostly created by domestic and simple industrial waste. Pollution problems were usually of a local nature and needed a local solution. However, as the national growth has increased the production of goods sharply, with it the production of common industrial waste has increased sharply. Further, new processes in manufacturing have produced new complex wastes that have not been easily handled by the current control technologies. The increased use of commercial fertilizers and the wide use of an enormous number of pesticides have contaminated many water sources. At present, long stretches of interstate and intrastate streams have become polluted and are continuing to be polluted at a rapid rate. Pollution usually is classified as either point source or non-point source. Non-point source pollution results from a vast variety of human activities either within or outside the urban area. This includes street run-off and drainage from dumps. In the rural areas, drainage comes from agricultural practices, croplands, drainage from dumps and also from many of the vast uses of pesticides. Point source pollution comes from a specific industrial operation or municipal waste discharge where specific materials have been dumped into the receiving waters.^{7, 11, 14}

The different types of waste that cause water pollution can be categorized as follows:^{7, 11, 14}

- Municipal Waste: This includes public sewage disposal, urban run-off and may include industrial waste. If not properly treated it can be hazardous to health.
- Industrial Waste: This waste may contain toxic and organic wastes that may be hazardous to the aquatic environment.
- Oxygen Depleting Waste: Organic wastes and ammonia which comes from domestic sewage and industrial waste of plant and animal origin contribute to the reduction of oxygen in the receiving stream.
- Waste Causing Physical Damage: Examples of this waste include materials from lumbering or mining operations which clog up waterways.
- Radioactive Waste: This waste may contaminate water or destroy aquatic life.

Effects of Water Pollution on Health

Whereas microbiological hazards used to be the major concern associated with water quality, today the situation has become much more complex. Water treatment plants and the chlorination process has eliminated many of the past water-borne outbreaks of disease due to microbiological factors. However, the potential for disease due to microorganisms is ever present and disease outbreaks continue to occur. From time to time new organisms create a new potential for disease.¹¹

There are many kinds of pathogenic bacteria and microorganisms that are released in water. Routinely, tests are taken of the bacteriological quality of water by measuring the indicator groups such as coliform bacteria, fecal streptococci and certain subgroupings, and other miscellaneous indicators of pollution. If these organisms are present, it is assumed that the water has been contaminated by warmblooded animals and therefore may be a hazard to humans.¹¹

The modern world is one of chemicals that when used properly are of great value but when misused or when not thoroughly understood in their use become a direct hazard to humans. The chemical problems and the potential hazards from radiation have created additional public health concerns.

Surveys made in 1975 showed widespread occurrences of organic materials of potential health significance in the raw water utilized for drinking in the United States. Although few of the chemicals have been tested for their potential toxicological effects, many of these have been identified as either potentially human or animal carcinogenic, mutagenic, or potentially teratogenic. Although studies carried out by the Environmental Protection Agency (EPA) in 1975 indicated a statistical association between cancer mortality rates and drinking water, definitive epidemiological studies have not been conducted and no definitive conclusions have been reached. Over 400 organic chemicals have been identified in treated drinking water in 1976, by the EPA. Organic compounds enter the raw drinking water through agricultural and urban runoff, industrial discharges and domestic sewage treatment plants.^{7, 11, 14}

Trihalomethanes, which have been associated with birth defects, were found in an 80-city (some of which were in Missouri) nationwide survey of drinking water quality. It is believed that materials of natural origin are a contributor to this problem. Chlorinated hydrocarbons include chloroform and carbon tetrachloride. Limits for trihalomethanes have been established and are in use.⁸

Radionuclides are naturally occurring contaminants. The addition of lime to water reduces the level of radionuclides by softening the water. Standards have been set and are in use for the amount of radiation allowable in water. Although some methodological problems need to be overcome, certain epidemiological studies have shown that the cardiovascular mortality rate is inversely related to water hardness. More work needs to be done in this area to establish the cost-benefit issues and actual risks involved in softening water.¹¹

Land application of waste water and waste water treatment sludges is being used in Missouri, and is being researched to determine its proper design and management techniques. Land application prevents point source discharge.

Proper treatment of water has reduced bacterial disease significantly. Certain additives put into drinking water such as fluoride have been shown to have a positive health effect: fluoride reduces cavities significantly.

Issue Analysis

At the state level, Missouri's Department of Natural Resources (DNR) has jurisdiction over the quality of water in streams and lakes. DNR's overall goal is to achieve designated beneficial uses of all waters in the state. DNR develops annual plans related to the assessment of water quality, geological evaluation, and water pollution control activities. DNR also administers the National Pollution Discharge Elimination System (NPDES) to manage industrial contamination from point 'source'. Control of toxic chemicals, like PCB's often come through the NPDES program. To monitor the progress of anti-pollution efforts, DNR monitors water quality all around the state.¹⁴

The Division of Environmental Quality is responsible for maintaining water quality through two of its programs: Water Pollution Control and Public Drinking Water Safety. The Division of Health is responsible for maintaining private drinking water safety.¹⁴

The Water Pollution Control program has its policies set by and regulations approved by the Clean Water Commission, which has the power to enforce pollution control mechanisms. The Commission ensures that all NPDES policies are performed. All point source pollutants in Missouri must have an NPDES permit. Non-point source pollution is not subject to permits given its diffuse nature.¹⁴

The Public Drinking Water program has a Safe Drinking Water Advisory Committee which sets regulations. They are responsible for overseeing the monitoring, enforcement and planning activities of the program. The program has a cooperative agreement with the Division of Health to provide technical assistance to those towns wishing fluoridation of their water supply. The Division of Health through the Bureau of Dental Health promotes fluoridation of water supply at the local community level.^{10,14}

By statute the Division of Environmental Quality cannot promote fluoridation of water supply. When a town or community decides that they want their supplies fluoridated the Division of Health contacts the Public Drinking Water program so that their personnel can assist the community in fluoridating their water. This arrangement works extremely well. To date 73 percent of Missourians receive water supplies with fluoride adjustment.^{10,14}

The Missouri Division of Health has jurisdiction over all private drinking water supplies. It also monitors the quality of water used by public water utilities. The State codes also contain regulations pertaining to the construction of private subsurface disposal. Permits are issued at the local level with on site inspection of well and septic system sites performed by local health departments.

Recommendations

The Division of Environmental Quality set the following goals to be met by 1986.

III-EH-5

Goal: Maintain a public water supply program which ensures that all of the population consuming water from a public water system receives water which meets all health related standards.

Goal: Develop and set priorities for compliance plans for all streams in Missouri where water quality is not in compliance with its intended use because of point discharges (municipal and industrial).

Goal: Prevent deterioration of ground water quality.

Goal: Identify and develop a policy to protect existing high quality streams by 1983.

Goal: Increase the percentage of municipal facilities in outstate Missouri utilizing effluent irrigation of farmland.

Goal: Increase the percentage of municipal facilities in outstate Missouri which apply their waste water sludge as a soil conditioner or fertilizer on farmland.

Responsible Agency: Department of Environmental Quality.

Goal: Ensure that all communities requiring fluoridated water supplies have them by 1986.

Goal: Ensure that all private drinking water supplies are adequately monitored by 1984.

Responsible Agency: Division of Health.



1b. Waste Management

Issue Identification

Missouri's solid waste legislation defines solid waste as "garbage, refuse, and other discarded materials including but not limited to, solid and semi-solid waste materials resulting from industrial, commercial, agricultural, governmental and domestic activities, but does not include overburden rock, tailings, mottle, slag, or other waste resulting from mining, milling, or smelting."²⁰ Gaseous and liquid wastes are carried by the natural transport system of the air and water currents. Solid wastes rarely mingle or disperse in the landfills when properly constructed.

The chief method for disposal of solid waste used in Missouri is sanitary landfilling. The Waste Management Program has been regulating sanitary landfills since 1972. Other methods of solid waste disposal such as resource recovery with or without incineration are currently being investigated in Missouri.

The problems of solid waste are those that occur when communities do not plan for their solid waste collection and disposal. They can be summarized under seven major headings: 1) the sheer quantity of the wastes; 2) menace of solid wastes to the health of individuals and communities; 3) the assault on the environment; 4) the indestructibility of many kinds of solid waste; 5) the expense of hauling them; 6) the political jurisdictions and social attitudes in the urban, suburban complex; and 7) the difficulty of gaining public support.^{11, 20}

Biological vectors, such as insects and rodents, may directly or indirectly transmit disease agents from solid waste to humans. Vectors multiply within or around the solid waste, which is often close to humans and the vector then becomes a potential source of transmission. For example, flies transmit enteric organisms from fecal materials to humans. They easily transmit bacteria, viruses, protozoa or helminths. As a second example, rats and mice are found in abundant quantities wherever solid waste is deposited. These vectors not only have a source of habitat and food, but readily transmit a variety of diseases to humans.¹¹

Contaminants from waste or the products of decomposition may leach into surface water, ground water or aquifers that are used as a source of potable drinking water.

Missouri's hazardous waste legislation refers to any waste or combination of wastes of a solid, liquid, contained gaseous, or semi-solid form which because of its quantity, concentration, or physical, chemical, or infectious characteristics, may 1) cause, or significantly contribute to an increase in mortality or serious irreversible or incapacitating reversible illness; or 2) pose a substantial present or potential hazard to human health or the environment. Hazardous

waste includes toxic, reactive, ignitable, corrosive, and waste petroleum based oils. Responsibility for seeing that such materials are disposed of so that they do not degrade the environment or pose a hazard to human health rests with the Missouri Department of Natural Resources.^{17, 20}

The management of hazardous wastes is emerging as a significant environmental problem in all industrialized nations, and it has become increasingly apparent that historical methods of hazardous waste management are largely inadequate to protect the public health. The sources of hazardous waste is primarily industry, although it may also be generated by schools, laboratories, hospitals and agriculture activities.

In aggregate, this material is generated at an annual rate of approximately 700,000 metric tons in Missouri, excluding radioactive wastes and residues resulting from mining operations.¹⁷

The Waste Management Program has been given the task of implementing a far reaching Hazardous Waste Management Law passed in 1977 by the 79th General Assembly of Missouri. Their duties pursuant to the law center around three activities:

1. Establishment of a regulatory program including developing a state plan and the necessary rules and regulations (public hearings have been held on a number of proposed regulations and the DEQ is in the process of finalizing the regulations).
2. Establishment of a seven member Hazardous Waste Management Commission appointed by the Governor. This commission is a real innovation in the management and implementation of a hazardous waste management program. The Commission will adopt the state plan, promulgate the rules and regulations, and hear appeals on the regulatory program.
3. Establishment of a hazardous waste management system for Missouri. This system should give Missourians an excellent planning and regulatory program for the management of hazardous waste. The system is composed of six parts:
 1. registration of hazardous waste generators;
 2. licensing of hazardous waste transporters;
 3. issuing permits for storage, treatment, and disposal facilities;
 4. surveying, monitoring, and reporting on disposal facilities;

5. enforcing the Hazardous Waste Management Law and assessing penalties; and,
6. a manifest tracking system to track the waste from the point of generation to the final destination.¹⁷

Other support services provided by the Division of Environmental Quality (DEQ) for the Waste Management Program include the DEQ Regional Office Program, and Laboratory Program. The Division of Geology and Land Survey also supports the Waste Management Program by their Engineering Geology field investigations.

Improper disposal of hazardous waste by any technique can provide five major routes for environmental transport of toxic substances to human populations. These are leaching to ground waters; leaching to surface waters; air contamination through burning, sublimation, evaporation or wind erosion, direct contact at the disposal site; and indirect exposure through food chains.

The Effects of Solid and Hazardous Waste on Health

Improperly managed solid or hazardous waste can produce undesirable effects on humans by biological, chemical, physical, mechanical, or psychological means. Illegal and uncontrolled dumping may cause disease by polluting water, infecting vectors of diseases, attracting pests, producing unpleasant odors.

Public health effects are normally correlated with the concentration of and duration of exposure to specific contaminants. In the area of hazardous waste disposal, this has been better documented for acute effects resulting from high concentration over a short period of time than for chronic effects resulting from exposure to low concentrations for long periods. Experience teaches, however, that acute events are important predictors of the potential for delayed or chronic events, which are possibly of greater significance to man.

The enormous number of compounds termed as hazardous waste are too great to list with their specific health consequences. Indeed in many cases their specific effects are not known or understood. Among the major known diseases produced by exposure to hazardous waste (particularly pesticides, herbicides, and chemical wastes) are congenital defects, deterioration of nervous system, liver cancer (polychlorinated biphenyls), bladder cancer (industrial dyes), skin rashes, hair loss, leukemia (radiation), chronic degeneration of major body systems and organs (agent orange or dioxin).

Issue Analysis

The main difficulties in proper collection and disposal of urban and rural waste are: 1) locating an ecologically sound site; and, 2) that the site be acceptable to the public.

Half of the USA metropolitan areas cut across two or more counties. One-fifth of them cut across two or more states. The municipality, faced with the necessity of finding disposal sites, looks to nearby areas, but these very often lie in other counties or other states. Since everyone wants wastes collected, but no one wants wastes deposited near him, the conflict between cities and counties or between urban and rural regions can become bitter. Political and social habits have not yet caught up with environmental needs. The resulting picture is one of community inability to deal with waste disposal for a variety of reasons.

One of the first logical steps in any planning process is to determine the magnitude of the problem to be solved. During 1977 and 1978 an effort was made by the Waste Management Program to determine the quantities of various wastes generated in Missouri. Missouri will continue to administer a permit program for solid waste disposal. No permit is now required or will be required from the federal government.

As part of the implementation of the hazardous waste management law in Missouri, a computerized tracking system has been developed. Records will be maintained of all hazardous wastes generated and/or disposed of in the state. This will provide more accurate data on quantities and kinds of hazardous waste produced in Missouri. This tracking system began in July, 1980. The information collected is valid, but may not be totally complete due to the newness of the program.

A major concern has been, of course, the disposal of hazardous wastes. As mentioned above, the tracking system being used by the Waste Management Program will provide information on the ultimate disposal of these wastes. At the present time environmentally sound disposal options are available to the public, but are limited by their willingness to accept the cost. One of the major activities of the Waste Management Program will be to review design plans and operating procedures of incinerators, resource recovery facilities, and land disposal facilities to insure that they can safely treat, store, reclaim, or dispose of hazardous waste. 17, 20

Another important activity involves the investigation and clean-up of sites where hazardous wastes have been disposed of in the past. The Waste Management Program has been and will continue to work closely with the EPA to identify and solve problems associated with these so-called "uncontrolled sites." The Waste Management Program is developing, in conjunction with the Laboratory Services Program, the necessary expertise and equipment capability to characterize potential chemical contamination from these sites. 17, 20

Since 1972, Missouri law has prohibited open, burning dumps and required that waste be disposed of in sanitary landfills. Regulations promulgated in 1973 established design and operating requirements for landfills. The regulations also address requirements for demolition of landfills; special waste disposal sites, such as disposal sites for scrubber sludges, wastewater treatment sludges, etc.; and processing facilities, which includes such things as transfer stations and resources recovery facilities. 17, 20

Essentially these regulations provide the framework for obtaining a permit from the Waste Management Program to operate any non-hazardous solid waste processing or disposal facility. Detailed design plans prepared by a registered professional engineer are required. These plans and an accompanying report must address all the environmental aspects of the proposed facility. Once these plans are reviewed by geologists and engineers within the Department of Natural Resources and the public participation process is carried out, a decision is made to issue or deny the permit. Permits are issued for the operation of the facility to the original applicant.^{17, 20}

Recommendations

Goal: Promote a resource recovery program of Missouri municipal waste.

Goal: Insure compliance with Missouri's solid waste management law and regulations for municipal solid waste.

Goal: Perform regular clean up of hazardous waste disposal sites.

Goal: Continue implementation of Missouri's Hazardous Waste Management Law and Regulations, and accomplish the necessary tasks to obtain authorization from EPA so that the state administers the program rather than the federal government.

Goal: Assure proper processing, disposal, and recycling of solid and hazardous waste generated in the state. Assist private enterprise and local government so that processing, disposal, and recycling facilities are reasonably available for all solid and hazardous waste generated in Missouri.

Goal: Promote the use or reuse of by-products from environmental control facilities.

Responsible Agency: The above goals are those of the Division of Environmental Quality, assisted by the Division of Engineering and Geology. The Division of Health will assist in determining where actual health hazards are and to set up a list of priorities.

Goal: Encourage cities and counties to exert their existing legal authority regarding Solid Waste Management and development of solid waste disposal and collection systems to include adoption of solid waste ordinances and enforcement activities in coordination with the Department of Natural Resources.

1c. Air Pollution Control

Issue Identification

Air pollution is generally regarded to be a phenomenon resulting from the industrial revolution. Air pollution however has always existed; what has changed over the course of history are the sources of pollution and the amount of pollution present. Unfortunately, the "older" types of pollution have not been replaced by "newer" pollution types, rather there has been an aggregation of the types and sources of pollution. The stench, contamination with airborne infectious disease particles and human waste materials and other animal materials is not just a phenomenon of the middle ages. It is still present in the modern world - in the underdeveloped and in the developed countries - wherever poverty, lack of cleanliness, and illness are found.^{6, 11}

There are many variables which may influence air pollution - air movement, wind, temperature, weather, relative humidity, topography all contribute to maintaining a certain level of air quality. A brief examination of these factors will enable a better understanding of how pollution works.¹¹

The weather's effect on pollution is noticed in the following: rain and snow clear the air by precipitating pollutants. Fog which contains aerosols can convert harmful gases into acids which cause corrosion of metals and irritation of eyes and the mucous membranes.¹¹

Pollutants have varied forms: 1) As particulate matter they may be liquid droplets, solid matter. Their size determines how far and fast they will dissipate their effect on health. The particles can be complex in composition. They may be simple metallic elements or complex hydrocarbons. When particulate matter is emitted into air its properties and nature may change due to interaction with the air and/or water molecules or other substances already present in the air. Their physical properties such as size can also be changed by being broken up. 2) As aerosols, fine, solid or liquid particles they are suspended in the air as smoke, gas, fog, dust or mist. These aerosols are carbon or soot particles, oxides, oil, salt, acid droplets, inorganic dust, and metallic fumes. More aerosols are formed in air due to photochemical reactions.¹¹

Sources of Pollution

Pollens, fog, dust storms, and volcanic ash are naturally occurring sources of pollution. These sources of air pollution are not controllable and may constitute a problem in certain areas.^{7, 11}

Combustion of fuel, evaporation, and incineration are man-made sources of pollution. These are controllable sources of pollution. Effort is necessary to reduce these controllable sources in order to prevent further problems.^{7, 11}

Combustion takes place in furnaces and engines. If combustion was complete and the fuel sources pure, no by-products of consequence would be emitted as a result of the process. However this is not the case. Industrial and home furnaces produce sulfur oxides, metal oxides, nitrogen oxides, hydrocarbons and carbon monoxides.^{7, 11}

The fossil fuel used in engines does not burn totally, consequently producing unburned fuel which usually evaporates partially, carbon monoxide, hydrocarbons, some nitrogen, and lead oxides. Internal combustion engines are responsible for 73 percent of the carbon monoxide, 56 percent of the hydrocarbons, and 50 percent of the nitrogen oxides produced in the United States. These figures are alarming in light of the vast amount of engines existing in the United States.^{7, 11}

Most of the odorous pollutants are produced by evaporation of substances such as organic pollutants from dry cleaning plants, surface-coating operations (e.g., painting, lacquering, waxing, etc.), petroleum product evaporation from gasoline pumping and gasoline storage.^{7, 11}

Industries can contribute significantly to local air pollution. The polluted emissions are the result of the manufacturing process which includes processing and treatment of raw materials as well the type of air pollution controlling devices present in the plant.

- Power plants: Carbon monoxide, sulfur dioxide, nitrogen dioxide hydrocarbons and particulate matter are the significant pollutants from power plants.

- Chemical manufacturers: The wide variety range of products produced by these industries and consequently their by-products does not permit a comprehensive listing.

- Metallurgical industries: Considerable amounts of sulfur oxide, particulate matter, gaseous hydrogen fluoride hydrocarbons, carbon monoxides, smoke, dust, and fumes are released from these industries.

- Food and agricultural industries: Dust, particulate matter and odor are the main offenders here.

- In Missouri, petroleum refineries, steel mills and factories contribute to localized air pollution on a very small scale.^{7, 11}

The Effects of Air Pollution on the Quality of Life

Air pollution has an injurious effect on those systems and organs of the human body which are directly or indirectly exposed to it. The respiratory system, the eye and the circulatory system are those which suffer most damage from unclean air.^{7, 11}

The structure and function of the respiratory system may be seriously altered by air pollutants. Both particulate matter and gases are capable of invading the mucosal linings and other structures, (e.g., cilia, bronchioles) of the respiratory system producing chronic

irritation, constriction, mechanical blockage and impediment of proper oxygen exchange. Increased concentration of carbon monoxide in the air inhaled causes increased levels of these gases to be absorbed into the circulatory system, thus making red cells less able to absorb the much needed oxygen. Headaches, dizziness, disorientation and eventually death, if the levels are high enough, are some of the symptoms present when carbon monoxide levels are high. The chronic lung diseases affected by air pollution include lung cancer, emphysema, chronic bronchitis and bronchial asthma. These diseases are more prevalent in urban than rural areas. Furthermore, during episodes of intense pollution these diseases are severely aggravated and can reach epidemic proportions. The major air pollution disasters that occurred in Donora, London, Los Angeles, and Meuse Valley have provided excellent examples of this effect. At the time of the major smogs in these cities other non-specific respiratory symptoms occurred in up to 80 percent of the population. Mortality rates also increased - the estimates available are not very good but indicate that anywhere from .1 percent of 10 percent of the excess mortality observed in these areas was directly attributable to air pollution. Among the factors complicating exact determinations of excess morbidity and mortality are the length and time the individual was exposed to polluted air. Location of individuals also affects the outcome because even within a city certain areas may be more polluted than others. Adequate measurement instruments and/or stations which would monitor air quality have not always been available.^{5, 6, 7, 11}

Missouri has two major urban centers which may be susceptible to periods of heavy smog or air pollution: St. Louis and Kansas City. St. Louis has very high levels of photochemical oxidants which have lead it to be a major area of concern for health effects. In Missouri lung cancer is excessively high in St. Louis and Jasper county. They have been identified as areas of main national concern. The lung cancer rate in these areas are much higher than that of surrounding areas and/or comparison areas even when controlling for such factors as cigarette smoking. The Centers for Disease Control and the EPA are currently conducting a joint study in the Jasper County area.¹⁴

Burdens placed on the respiratory system will affect the circulatory system given their close relationship. Individuals with weakened hearts may not be able to bear the stress of excess pollution.

Because the eye is directly exposed to the atmosphere it is particularly sensitive to any matter that may be floating in it. The irritation caused by foreign materials entering the eye produces a tear reflex which makes eyes watery. In addition to irritation, pollution also causes decreased visibility.¹¹

Animals are also affected by air pollution. Given Missouri's large numbers of cattle, sheep, and hog farms, this problem is one of great concern, because animals serve as sentinels of potential harm to humans. Another factor which needs attention is the obvious food chain link in which humans eat animal flesh. The Minamata story is a clear example of this potentially serious problem. Animals, who also

breathe polluted air, suffer from respiratory problems. They feed on grass which has been contaminated with precipitates of air pollution. Arsenic, zinc and fluorides are some of the worst offenders, slowly poisoning and killing off herds.^{11, 14}

Vegetation is affected very quickly by pollution. Crops are destroyed. Shrubbery and ornamental plants become spotted and eventually devastated. Some sulfur oxides cause direct burn injuries to the plant, while the photochemical oxidants close up the leaf openings through which plants absorb carbon dioxide.^{11, 14}

Property is also damaged by air through the corrosive effect of suspended particulates. Materials may fade and decay, and paints become discolored more quickly.

Visibility is also reduced by smog due to the scattering of sunlight by particulates suspended in the atmosphere. Dense fog caused by large concentrations of aerosols can be particularly hazardous.¹¹

Issue Analysis

The Clean Air Act of 1963 authorized the federal government to give funds to state and local agencies to help them develop, establish or improve control programs. In 1967, new legislation was approved requiring the establishment of national emission standards for industries and the creation of regional commissions to establish air quality standards. The Clean Air Act amendment of 1970 established new legal techniques of pollution control accompanied by strict federal control standards. Missouri's legislation officially recognized the importance of clean air in 1965 with the passage of the Air Conservation Law. The law established the Air Conservation Commission as the state agency to prevent, abate, and control air pollution by practical and economically feasible methods. With state government reorganization in 1974, the Commission and its staff was placed with the Missouri Department of Natural Resources (DNR). Both the Commission and DNR staff members are committed to eliminating violations of the national primary standards by 1987. Currently the U.S. Congress is again revising the Clean Air Act Amendments. Regulations are expected to change at the national and subsequently the state level.^{11, 14}

It is the Air Conservation Commission's responsibility to adopt, amend, and repeal the state's air pollution control regulations. The existing regulations for outstate Missouri encompass various aspects of air pollution: odors, sulfur compounds, fugitive dust, open burning, industries, power plants, incinerators, air pollution episodes, and new source performance standards.¹⁴

DNR's air quality and laboratory services program has the responsibility of carrying out the Commission policies and enforcing the regulations. There are four sections within the air quality program: enforcement, technical support, administration, and planning.

The National Air Quality Standards are in two parts. The primary standards protect public health by setting a limit on the amount of pollutant in ambient air that is safe for humans. The secondary standard protects public welfare by setting (usually more stringent than the primary standard) limits on the amounts of pollutants considered safe for clothing, buildings, vegetation, crops and animals. Maximum concentrations of pollution used in these standards are based on scientific evidence on the pollutants effect on public health and welfare.

There are six transportation related air pollutants for which there are standards: carbon monoxide, photochemical oxidants, hydrocarbons, nitrogen oxides, particulate matter and lead. Although Missouri does not have test sites for all the pollutants throughout the state, carbon monoxide has been measured in excess of the standards on various occasions in most areas of the state with congested traffic. Photochemical oxidants have also been measured in excess especially in the St. Louis area.¹⁴

In order to reduce the excessive carbon monoxide and photochemical oxidants in St. Louis, the Commission has approved a transportation control plan which includes a regulation to control the emission of evaporative hydrocarbons such as gasoline from storage, loading, and transfer at bulk terminals and service stations. Controlling these reactive hydrocarbons will reduce the level of photochemical oxidants by approximately five percent.¹⁴

DEQ is working to develop and revise a plan for the St. Louis area to control volatile organic compounds. The transportation control plan also may include increased emphasis on techniques to reduce emission such as car pooling, reserving highway lanes for buses and car pools, developing a more efficient mass transit system, decreasing the supply of parking space to encourage fewer vehicles and better use of mass transit, and improving traffic flow by synchronizing traffic lights to insure a steadier flow. The state legislature will be involved with controlling the automobile-related pollutants. As the law now reads, the Commission does not have the statutory authority to control indirect pollution sources such as highways or parking lots. Legislative authority will be needed to implement these parts of the federally-required transportation control plan.¹⁴

Recommendations

Goal: By FY 85, continue work towards compliance with federally established ambient air quality standards in accordance with the new regulations set in the final 1982 Clean Air Act Amendments. By FY 88 attain and maintain national ambient air quality standards throughout the state in accordance with schedules previously developed in the DEQ State Implementation Plan (SIP).

Responsible Agency: Division of Environmental Quality.

Goal: Establish an education program to inform the public on what measures should be taken to ameliorate the effects of non-controllable air pollutants.

Responsible Agency: Division of Health.



1d. Noise Pollution Control

Issue Identification

Noise is vibration conducted through solids, liquids, or gases. Sound is produced when pressure variations having certain characteristics reach the ear. These pressure variations may be produced by an object that vibrates in a conducting medium with the proper amplitude, frequency and cycle rate. Noise usually includes a number of different sounds that vary in intensity, pressure, frequency, and duration. The louder the noise, the higher its intensity and the more damage it causes to humans. The longer the noise exposure, the greater the damage to human hearing. Loudness is perception of the amplitude of sound. A decibel (dB) is a unit for measuring the relative loudness of sound and is equal approximately to the smallest degree of difference of loudness ordinarily detectable by the human ear, over a range of about 130 units, with one unit being the faintest audible sound. The threshold of comfortable hearing ranges from 20 dB's (very quiet) to 55 dB's (very loud). Individuals vary in their sensitivity to various levels of noise and may have altered thresholds in either direction.¹¹

Background sound in an office may be 30 dB's, in a factory 50 dB's. The sound a jet produces in taking off is about 160 dB's. Sound is actually felt at a level of 120 dB's; pain may be produced at that level.

Sources of noise are everywhere: automobiles, airplanes, trains, factories, television, radios, household appliances, conversation, waterfalls, etc. The list is endless.

The Effect of Noise on Health

Environmental noise may cause temporary or permanent hearing loss, physical and psychological disorders, interference with voice communications, disruption in job performance, and disruption of rest, relaxation, and sleep. Noise-induced hearing loss is due to damaged cell structures of the ear. Physical and psychological disorders are due to change in the response of the nervous system. Noise is responsible for an increase in muscular activity, constriction in the peripheral blood vessels, acceleration of the heartbeat, changes in the secretion of saliva and gastric juices, increased incidence of cardiovascular disease, an increase in ear, nose, and throat problems, and an increase in equilibrium disorders. A noise level of 100 dB's will interfere with speech. One hundred and thirty dB's cause vibration of the viscera; 133 dB's cause a loss of balance. Any level above 130 dB's is damaging. Above 160 dB's the eardrum may rupture. Annoyance due to noise is related to its loudness, frequency, and intermittency. As an example, if one were to sit in a quiet room and listen to water drip, it would eventually cause considerable annoyance and discomfort.^{11, 19}

After exposure to a particularly noisy environment (e.g., factory work, rock concert) there may be a temporary shift in the hearing

threshold, which eventually reverts to normal. It is important to understand that noise exposure has an additive effect in that prolonged exposure to low or moderate sound levels is as detrimental as short exposures to high sound levels. Night exposures may have a more significant effect than day exposures because of perceiver sensitivity and greater impact through lower existing night time noise values.^{11, 19}

Issue Analysis

Noise levels capable of causing hearing loss occur more frequently in the work environment than in residential or social settings, although this does not exclude exposure in the latter category. Emphasis on noise reduction should be directed at the work place.^{11, 19}

In industrial situations, programs of preplacement audiometry have been instituted for workers in noisy environments in order to eliminate those who already have some loss of hearing. This loss may be augmented by exposure to concentrated high levels of noise. Attempts to modify machinery and erect sound barriers can be helpful.

Noise is controlled by use of proper engineering, proper administrative techniques, and personal protective equipment. When replacing equipment, total noise levels for the area should be considered and pieces of equipment with lower noise levels utilized wherever possible. The proper maintenance of equipment is essential since worn or imbalanced parts, improper adjustments, inadequate lubrication, and improperly shaped tools contribute to the noise problem. Belt drives on machines should be substituted for gears wherever possible. Vibrations may be dampened, or decreased, by increasing the mass or stiffness of the equipment or material and by using rubber or plastic linings. The supports of machines should be strengthened. Flexible mounts, hoses, or pipes should be used, if possible. Mufflers at either the intake or exhaust on internal combustion engines and compressors should be checked regularly and replaced when needed. The noise source and the operator should be isolated when possible.^{11, 19}

Recognition of noise and hearing loss problems in industry has promoted the passage of regulations towards this health problem. The regulations specify that no worker is to be exposed to more than a cumulative total of 90 dB's per an eight hour daily exposure.

Proper administrative controls reduce excessive noise exposure by adequate arrangement of work schedules, removing the worker to a low noise level when he has worked at a high level during the day, dividing the work at high noise levels into several days or among several different people, running a noisy machine a small portion of the day, running high level noise machines when a minimum number of employees are present.

Industries or other occupational settings where high noise levels are encountered can contribute significantly to reducing noise related hearing loss. For example, this could be done by establishing a hearing conservation program which could include some or all of the following areas:

- The use of personal protective equipment such as earplugs and earmuffs that reduce the sound level from 40 to 25 dB's.
- Individuals subjected regularly or frequently to 90 dB's or above should be tested.
- A complete medical examination and previous work history should be completed for each worker and maintained on a regular basis.
- Individuals showing signs of physical damage or having spent long periods of time at high noise levels in the past, should be assigned to a much quieter environment.

There is a paucity of data summarizing the true extent and nature of hearing loss produced as a consequence of either occupational or personal/social exposure to increased noise levels. Estimates of the total number of production line workers experiencing noise conditions hazardous to their health range from six million to 17 million.^{11, 14}

Recommendation

Realistically, it must be recognized that, while noise pollution is an environmental hazard to health, the efficacy of controlling noise is such that goals which would eliminate sources of noise pollution are not readily attainable. Therefore, it would seem to be more worthwhile to promote education and awareness programs about the effects of noise pollution on health.



1e. Radiation Safety

Issue Identification

There are two sources of ionizing radiation and radioactive materials to which humans can be exposed: natural and man-made. Naturally occurring radiation sources include radioactive materials present in the earth (mainly uranium, thorium, radium and potassium) and cosmic rays filtered through the atmosphere from space. Man-made sources of radiation include medical isotopes and X-rays, fallout from nuclear weapons testing, research laboratories, nuclear power plants, and consumer goods. Of the total amount of radiation an individual is exposed to in a year, 53 percent comes from natural sources, and 47 percent from man-made sources. Of the man-made sources 90 percent comes from medical and dental X-rays.¹⁵

The half-life of a radioactive element is the time required for half of the original unstable material to decay. The type of radiation, activity and half-life are factors in categorizing nuclear waste material. Other factors which are also considered include their physical state, i.e., whether they are gaseous, liquid or solid form.¹⁵ Sources of radioactive waste are nuclear power generation, fuel reprocessing facilities, medical research and developmental laboratories, industrial laboratories and industrial usage. Radioactive waste disposal is not presently regulated by Missouri law, but is regulated at the Federal level by the Nuclear Regulatory Commission.

Nuclear waste, if properly handled, will add miniscule amounts of radiation to the environment. Accidents, spills or improperly treated waste can present a significant hazard. In Missouri the following sources have been identified as producers of radioactive waste:¹⁴

Manufacturers - The state has two major manufacturers of radio-pharmaceuticals and radiochemicals: Industrial Nuclear Company and the Mallinckrodt Chemical Works.

Reactors - The state has two university-operated reactors, one located at Rolla and one located at Columbia.

Power Plants - Missouri has no nuclear power plants at present. Missouri's first plant is being constructed by Union Electric in Callaway County. Missouri is also vulnerable to radiation exposure from two outstate nuclear power plants. One of these plants is the Quad Cities Plant in Cordova, Illinois, on the Mississippi River upstream from St. Louis. The other is the Cooper Nuclear Station just across the Missouri River near Brownville, Nebraska. The wind direction at this plant is into Missouri 66 percent of the time, and the water supply for St. Joseph is only 80 miles downstream.

Fuel Fabrication - One fuel fabrication plant operates in Missouri: Combustion Engineering Plant, Hematite, Missouri. This

plant coverts uranium hexafluoride (UF_6) powder, which is then molded into fuel elements for light water reactors. These uranium compounds have a low level of radiation. In addition to its potential for radiation, it should be noted that uranium hexafluoride is toxic to humans.

Hospitals - Most major hospitals in the state use radioisotopes and radiopharmaceuticals.

In 1982 there were ten sites in Missouri having radioactive waste material which were in the process of being monitored, cleaned up or stabilized by either the Nuclear Regulatory Commission or the Department of Energy. These sites are remnants from the time when there was inadequate control of radioactive waste disposal. The sites are not licensed to receive additional waste material that is currently being generated.

Effects of Radiation on Health

The effect radiation has on health is directly related to the length and amount of exposure. The effects can be mild to lethal. A dose of 500 rems delivered over a short period to the whole body will cause death in an average of 50 percent of the cases over a 30 day period. At lower radiation levels, the consequences are more difficult to predict and detect.¹⁵

For low radiation doses it is cell damage, not cell death, that may take on greater importance. A dead cell can be replaced. Damage, however, can replicate itself and multiply. The following are examples of the principal kinds of damage known to occur after exposure to radiation.¹⁶

- Genetic: Although genetic mutations have been demonstrated in plants and laboratory animals they have not yet been clearly established in man due to limited research on the effects of controlled radiation on man.^{15, 16}

- Somatic: Somatic effects have been demonstrated. In Hiroshima women who were exposed to low levels of radiation during the first trimester of pregnancy bore children with markedly smaller head circumferences and who were mentally retarded. Disturbances in growth and development were also observed although the exact dose/response relationship has not yet been established. The same is true for the carcinogenetic effect of radiation. Excess leukemia and other cancer cases were not observed in the Japan bombing populations until 25 years after the fact. It is not disputed that excess radiation causes cancer, what is disputed is the relationship between the dose and the effect. Exposure to other carcinogens such as certain chemicals helps confound the issue.^{15, 16}

Issue Analysis

The Bureau of Radiological Health in the Missouri Division of Health is charged with the monitoring and inspection of equipment utilizing or emitting radiation. No Missouri agency has overall responsibility for the inspection of nuclear plants or other facilities utilizing radioactive material or has the responsibility for an assessment of their eventual positive or negative effects on man or the physical environment. However certain aspects of the regulation of these facilities are part of the responsibilities of the Division of Environmental Quality.¹⁴

Unfortunately due to budget restrictions and lack of manpower the Bureau's inspection activities are not conducted as frequently as desired. Likewise, its environmental surveillance activities are also severely limited. There are currently 7,374 X-ray machines registered in Missouri; 2,433 of these were inspected in 1981 by the Bureau of Radiological Health. One hundred and seven of a total of 114 radioactive materials facilities were also inspected during the calendar year. In addition, 566 water samples were analyzed for gross alpha and gross beta radioactivity concentrations.¹⁰ The NRC is also actively involved in inspecting radiation equipment.

The Division of Health and the Division of Environmental Quality are working on a joint agreement which will delineate the responsibilities of each agency in the areas of environmental surveillance, inspection of radiological equipment, and disposal of all low level radioactive waste products.

The Disaster Planning and Operations Office, Office of the Adjutant General has the responsibility for developing an emergency plan in case of nuclear accidents. This plan is coordinated with other agencies among them the Division of Health. The Division of Health is responsible for the accident assessment and evaluation of the need for protective action. The Bureau of Radiological Health informs the public of appropriate protective actions or measures including decontamination.

In December, 1980, the United States Congress passed Public Law 96-573 which deferred all responsibilities of low level radioactive waste to the individual states. In the Summer of 1981, by Executive Order from the Governor, a Low Level Radioactive Waste Task Force was established and charged with advising the Governor and the Legislature on the need for an interstate compact which will regulate the disposal of low level radioactive waste.

Missouri has two options for disposing of radioactive waste:

1. Missouri disposes the waste without other state involvement,
2. Missouri enters an interstate compact which will govern, regulate the transportation and disposal of low level radioactive waste on an interstate basis. This is the most viable option for Missouri because it is not a large producer of LLW waste.

Recommendations

Goal: All medical uses of radiation should be limited to the minimum exposure levels consistent with requirements of the particular procedure as established by the American College of Radiology and by the NRC.

Objective: The Bureau of Radiological Health should increase its inspection frequency to ensure that all radiological equipment meets minimum standards and is used safely.

Goal: Risks to citizens from inter- and intra-state shipments of radioactive materials should be minimized.

Goal: Regulations should be enacted to ensure that non-ionizing radiation levels in both the outdoor and indoor environment are kept at safe levels.

Goal: By 1983, support enactment of, and allocate responsibilities of a comprehensive Radiation Protection Act concerning burial of radioactive waste, inspection of radiation machines, monitoring of the environment and emergency response systems to the Department of Social Services (Division of Health) and the Department of Natural Resources (Division of Environmental Quality).

Goal: Develop and implement a program to protect the public and environment from improperly managed and disposed of radioactive waste. Achieve legislative authorization by July 1, 1983, and implement the program by July 1, 1986. The agency responsible for executing this program will be the Division of Environmental Quality.

2. Occupational Environment

a. Occupational Health and Safety

Issue Identification

That jobs might be hazardous is not a new idea. However, until quite recently, both workers and lawmakers failed to grasp the problem's scope. "Occupational health" once usually referred to the attempt by management or unions to limit the number of limbs lost to machinery, eyes damaged by chemical sprays, or lives lost in explosions or mine cave-ins. Although numerous laws have governed industrial safety, the threat of on-the-job accidents remains real. In 1971 in the United States, Nicholas A. Ashford calculated that more than one in forty industrial workers died from work related injuries or suffered a reportable injury on the job. In that year, reported accidents at non-agricultural workplaces in the United States caused more than 14,000 deaths, over 100,000 permanent disabilities, and upwards of two million temporary injuries.

The "traditional" threat of industrial accidents looks small beside that posed by the occupational diseases that medical researchers are now identifying. The United States Public Health Service has estimated that 390,000 new cases of occupational disease appear annually in the United States while up to 100,000 occupationally related deaths occur each year. Because many occupational illnesses develop slowly, the dimension of occupational disease remains relatively unknown. The more the problem is studied, the more pervasive it seems to be.

Occupational health hazards to which workers may be exposed are usually classified into the following categories:

- a. Toxic chemical agents such as solvents, dusts, gases, metallic compounds, plastic and synthetic resins, and pesticides.
- b. Physical agents or energy stresses such as excessive noise, temperature extremes, vibrations, pressures, and ionizing radiations.
- c. Biological hazards such as infectious agents.
- d. Other work-related stresses such as rigors of work process, equipment design, workplace layout, relationship between capabilities and tolerances of the individual worker and the demands and stresses of the job.

The breadth of the occupational health problem, including both accidents and diseases, is difficult to comprehend. Workers in an industrialized society such as ours face special health risks. As a consequence, we see both short and long-term occupational hazards in nearly every profession.

Miners face the highest health risks from both the standpoint of accidents and mine disasters and disability or death from chronic lung diseases due to mineral dusts. They also have higher than normal cancer rates.

Industrial workers face a host of hazards, some new and some old. The hazards range from inhalation of toxic chemicals to loss of hearing from incessant loud noise. This group may live under noise-related stress that may promote cardiovascular and neurological disorders. The petrochemical and plastics industries have also exposed workers to a whole new set of hazards. The long-term health effects of the many hundreds of thousands of chemicals in industrial use are not known.

Agricultural workers rank alongside miners as a group manifesting a disproportionate share of occupational injuries and illness. While constituting only 4.5 percent of the labor force in the United States in 1971, farm workers accounted for approximately 16 percent of the country's recorded occupational deaths and 9 percent of the record injuries. Only mine and construction workers have worse records. Farm worker poisoning by pesticides and herbicides is also an enormous and considerably underestimated problem. Most pesticide induced maladies are either never brought to a doctor's attention, inaccurately diagnosed, or unreported due to the temporary nature of the malady.

Occupational diseases that afflict women constitute another health category. While women constitute an ever increasing percentage of the national workforce, all but a small fraction of occupational medical studies have involved male subjects, and little is known about sexual differences in the response to toxic substances. At the turn of the century, well publicized abuses of women (and children) in unsafe workplaces spawned laws designed to protect them. Today, however, many new questions about women's occupational health are being raised as more and more women risk exposure and as our medical understanding of toxic substances grows.

The potential for fetal exposure to dangerous substances or radiation is especially high. In the United States alone, many women of childbearing age are exposed on the job to chemicals and metals that might cause birth defects, cancer, miscarriages, or possibly, behavioral problems. While the developing fetus is considered more sensitive to hazardous agents than an adult, sufficient knowledge on which to base allowable exposure standards for pregnant women have not been established. Given the uncertainties, the current trend in some industries is to bar all fertile women categorically from jobs that entail a chance of fetal damage. However, women continue to move into industrial jobs traditionally held by males and, in addition, some factories and shops traditionally have employed mainly female workers. In both cases, women have the same needs as men -- for close medical attention to potential hazards, open access to information about hazards, and for all possible safeguards.

Health hazards in workplaces represent production costs that have seldom been estimated, let alone billed to those responsible for them.

Interjecting both worker and community health considerations more fully into economic decisions will promote better work protection. It will also insure that, when prevention fails workers will be more justly compensated for their unwilling sacrifices.

Issue Analysis

Within the last decade, occupational health has become an issue to more people. The occupational origins of some cancers and lung afflictions have also been more widely understood. Unions and management both have begun to show serious interest in the long-term disease threats as well as traditional job safety.

The passage in 1970 of the Occupational Safety and Health Act and in 1976 of the United States Toxic Substances Control Act has moved the states, if haltingly, toward a more systematic approach to the occupational health problem. In Missouri, the majority of the responsibility for ensuring workplace safety still rests with the Federal government.

All indications are that a multitude of occupational influences on disease, especially those that promote cancer, have defied detection. It is also evident that even known threats are not being dealt with directly. Individual attitudes and worker behavior are also important considerations. In summary, balancing the benefits of producing a particular product against long-term, imprecise health risks that may result from occupational exposure is as much a matter of personal and social judgment as it is of economic analysis.

Recommendations

Goal: To ensure an occupational environment which contributes positively to the health and well-being of workers, their families, and the state at large. Through elimination of risks of illness and injury in the occupational environment and surrounding area.



3. Residential Environment

3a. Housing and Residential Hazardous Control

Issue Identification

The residential environment of an individual has been shown to be of utmost importance to the individual's well-being. Adequate housing not only contributes to good physical health, it also provides a beneficial environment to the individuals mental health and social well-being.^{11, 12}

There are several types of housing that differ in the kind of residential environment they provide the individual. The two major categories of housing are institutional and non-institutional facilities. The various types of housing within these categories will be discussed briefly for illustrative purposes only.

Housing types are varied, thus range from single family dwelling to apartment houses, to dormitories, and hospitals. They can be permanent or temporary such as trailers or hotels. The quality of construction, the proper maintenance and use of any housing can directly affect the individual's physical and mental health. For example, children have been known to eat, lick the lead paint used in older, lower income apartment houses. This habit causes a disease called pica, which is simply, lead poisoning. Thousands of children are affected every year. The Public Health Service has recommended that screening programs be performed to detect high blood levels of lead in children. Other types of problems that have an effect on individual health will be discussed in the following section.¹¹

The Effect of the Residential Environment on Health

The quality of lifestyle and housing has an impact on the quality of life. In general, infectious diseases, chronic diseases, and environmentally created diseases are more prevalent in poor housing, than in better housing. Congestion within the house can lead to increased upper respiratory disease because of the close contact with contaminated individuals. It is difficult to attribute any given disease to the housing problem. A number of variables should be considered in examining the relationship between quality of housing and health. These include the basic personal hygiene practices and habit patterns of individuals, their susceptibility to certain diseases, and a vast variety of additional stresses. Within a defective housing structure there are various stresses such as noise, improper lighting, inadequate space, improper ventilation, the presence of insects and rodents, and a variety of solid waste. Surveys indicate that individuals living in substandard housing with the aforementioned problems have higher infant mortality rates, a greater level of disease, poorer health, more nutritional and dental problems, and a variety of other health defects. Even though a specific disease may not be traced to a

specific type of housing problem, with the exception of an outbreak of typhoid fever being traced to a typhoid organism found in a defective plumbing system, it is still recognized that disease rates are higher among substandard housing dwellers.^{5, 6, 11}

Environmental stress not only reduces the ability to fight off infectious disease but also causes specific environmentally related diseases. For the chronically ill, environmental stress creates further problems contributing to deterioration of their conditions. Noise is a specific environmental problem. Today humans live in shelters that have increasingly high levels of noise. The noise may be due to a lack of sound-proofing in poorly or cheaply constructed buildings, and neighborhoods in or near commercially zoned areas and traffic routes. Noise causes nuisance, irritability, and loss of sleep.^{5, 11}

Issue Analysis

The following outline identifies some of the more important causes of poor health within the residential environment; and it also illustrates the kinds of problems associated with the various agents.¹¹

- Ventilation - Fresh air is necessary to avoid accumulation of bad odors, airborne viruses, toxic gases, etc.
- Temperature and humidity - Appropriate ranges of both temperature and humidity should be maintained to avoid heat loss and/or over heating. Excessive humidity and dampness may lead to wood rotting and deterioration of walls.
- Density (Crowding) - Over crowding may lead to increased mental stress, nervous irritation, and to more rapid dispersal of infectious agents particularly when adequate hygiene controls are not in effect.
- Sewage Disposal - If sewage disposal mechanisms are inadequate or lead to overflows, any pathogens present may contaminate other water supplies by spreading infectious diseases as well as creating bad odors. Stagnant water pools caused by overflows or other causes provide breeding grounds for mosquitoes and flies.
- Solid Waste Disposal - Improper handling of solid waste disposal may result in infestation by rodents, odors, and air pollution problems.

Gas Appliances -

Leaks in gas ovens or other gas appliances may be due to faulty or improperly cleaned equipment. Carbon monoxide poisoning may result from the leaks. Adequate ventilation of rooms where this equipment is used is vital.

Electric Appliances and Lighting -

Faulty wiring, inadequate grounding, and exposed wiring not only are fire hazards but also are potential electrocution sources. Poor lighting may lead to accidental falls.

Poisons -

Furniture polish, waxes, cleaners, bleach, and medication are all potential poisons found in various areas of the house. They should be kept in safe places, out of reach of small children.

Physical Characteristics -

Loose handrails or stair cases and loose steps, to carpeting for steps are a major source of accidental falls. Slippery floors can cause major slips. Bath tubs are other places where bad falls can occur.

Fire Hazards -

Fires are easily caused by improperly lit fires and/or unprotected fireplaces. Children are at high risk for receiving burns from open fireplaces. Fires are also caused in kitchens by pots boiling over, etc.

Issue Analysis

Accidental death is the fourth leading cause of death for all Missourians. In 1980, 5.5 percent of all deaths were due to some type of accident. For individuals aged 1 - 34 accidents are the leading cause of death. The elderly are the next highest risk group for death from this cause. For the very young and the elderly the home is the place where most fatal accidents occur. In the 0 - 4 year age group 57 percent of all accidental deaths occurred at home; for the 65 - 74 year age group it was 39 percent; and for the 75 and older, it was 48 percent during the 1980's.

Furthermore, home accidents constituted 26 percent of all accidents occurring during 1980. Falls and fires accounted for 49 percent of accidents occurring in the home. Clearly these statistics show much room for improvement. 3, 11

Recommendations

Goal: Establish housing codes for all areas of the state that do not presently have one.

Objective 1: Enforce housing codes by 1985 in new and old buildings that are either publicly funded or rental units.

Goal: Ensure that Missourians have access to knowledge on preventing accidents in the home.

Objective 1: Encourage community educational programs about home safety.

Objective 2: Coordinate and expand activities of poison control centers statewide.

3b. Food Protection and Food Quality

bi. Sanitation and Safety

Issue Identification

One of the basic needs of man is a safe, wholesome, and nutritious supply of food. Without assurance of such a supply, the health and well-being of the consumer is impaired. Food can be a vehicle of disease transmission, a source of toxins, poisons, and the cause of malnutrition.

It is estimated that from two to ten million people in this country contract some form of microbial foodborne disease annually. The economic loss to the country as a result of this problem, in terms of the drain on our medical resources as well as the lost productive effort, amounts to many millions of dollars each year. The development of new foods and the widespread use of new technological procedures in the food industry have contributed to the proliferation of products whose impact on public health is relatively unknown. The use of filthy or decomposed raw materials or unsanitary conditions in food manufacture and processing permits possible health hazards to exist in the finished products.

The protection of the nation's food supply is a major problem throughout the country. Food protection has become sufficiently complex to almost defy complete control at any one level of government. Sanitation problems can occur in any of the 45,000 food processing establishments, or among 25,000 manufacturers, warehouses, and other types of firms. In addition, there are approximately 500,000 restaurant-type food service establishments in the United States in which contamination can occur.

There is a need to coordinate and strengthen the existing programs to provide more comprehensive protection throughout the food processing chain, delivery to the market place, and to the ultimate consumer. Environmental health agencies have a responsibility to see that this protection is provided, whether directly through their operation or through the efforts of other competent agencies.

The primary elements which comprise the mission of a food protection program are:

1. to assure a wholesome and clean food supply free from bacterial and chemical contamination, filth, and natural or added deleterious substances;
2. to assure adequate nutrition to the consuming public by ensuring compliance of foods with established nutritional quality guidelines, and with standards of quality and identity, and by ensuring that foods marked for special purposes are suitably labeled to fully inform the consumer as to their nutritional attributes for that purpose; and,

3. to reduce foodborne disease transmission and prevent significant microbiological and chemical contamination and decomposition during production, processing, distribution, storage, preparation, and service of food.

The chemical entities comprising those constituents of foods that are pertinent to food safety are introduced into foods through a number of routes: 1) those present as naturally-occurring components or contaminants; and 2) those added by man in the course of food manufacture or preparation.

From the standpoint of toxicology, the breadth of this field makes it difficult to single out individual substances or even groups of related substances for attention. A comprehensive list of the known chemicals comprising the entire group of naturally occurring toxicants and intentional or accidental additives in foods encompasses a vast array of chemical types. Consideration of this broad range of substances reveals many problems of public health significance which require further research effort. In the sections that follow, a list of primary problems that require immediate attention have been identified.

Microbiological Contamination: It is estimated that approximately ten million persons suffer from foodborne illness annually. Salmonellosis, shigellosis, illness due to *C. perfringens*, vibrio and viruses, food poisoning caused by staphylococcal enterotoxins and botulinal of new foods, changing distribution systems, centralizations of food processing, and the widespread use of new technological practices and process control procedures have resulted in the potential for foodborne illnesses. Illness associated with food prepared in restaurants and catering establishments where adequate cleanliness is not assumed presents a continuing serious problem.

Chemical Additives Contamination: Among the non-nutrient constituents added to foods by man are substances intentionally placed in foods by the application of some form of processing. Residues from soil, crop treatment or animal feed additives may also be present in food products. The utilization of food additives has increased drastically in the past ten years. It is estimated that the average American consumes three pounds of chemical additives in his food each year.

The chemical additive problem of food protection includes assurance that the additive performs its intended use only, and that the maximum level of each additive introduced into the total food consumed is known and does not exceed an established tolerance for that additive. It is also important to be certain that only approved additives are used.

Substances identified as having at least a minimal effect on food safety are listed below:

- a. Plant toxins

- b. Marine toxins
 - 1. PSP "red tide"
- c. Fungal toxins
 - 1. aflatoxin
- d. Intentional food additives
 - 1. nitrates
 - 2. nitrites
 - 3. nitrosamines
 - 4. sodium chloride and phosphates
- e. Food contaminants
 - 1. mercury
 - 2. lead
 - 3. cadmium
 - 4. other trace elements
- f. Organic contaminants
 - 1. pesticides (DDT, dieldren, etc.)
 - 2. herbicides

Nutritional quackery (i.e., deceptive and misleading claims in labeling) is a major problem and is estimated to cost American consumers as much as \$500 million a year. This estimate of \$500 million does not cover the area of slack fill, poor quality, substitution of cheaper ingredients for more expensive ingredients, low drained weights, etc. Adequate food standards serve to protect the health as well as the pocketbook of consumers.

Another problem is the protection of the nutrients in food from loss due to improper storage, excessive shelf life and rancidity. This is especially serious in foods promoted specifically for their nutritional values. Additionally, individuals responsible for food preparation and handling in public eating establishments should be made aware of the importance of protecting foods from nutritional deterioration through poor handling during preparation. Unfortunately, poor food handling techniques are still common practice in food service establishments.

Issue Analysis

Missouri has approximately 5,943 food service establishments. Present estimates indicate that one meal in three is consumed away from home and projections are that this will increase in the 1980's. The amount, type, and quality of the food consumed, given these projections, becomes very important from a public health perspective.

To enforce legislation designed to protect the public from food-borne illness and unwholesome food, the State Division of Health certifies both state and local health department sanitarians and inspectors who have the responsibility to enforce Missouri's Public Health Code.

As seems to be the case in many states, establishments are not being inspected as mandated. The State Division of Health and local health departments do not have staff to do an adequate job. Compounding these problems is the fact that personnel involved in food service programs at both local and state levels also have other responsibilities, e.g., housing, water supply, sewage disposal inspections.

Food safety activities center around Federal laws and National enforcement. The Delaney clause as promulgated by the Food and Drug Administration provides for determination of carcinogenicity of additives in cosmetics and food stuffs. Little enforcement on the state level takes place. Federal inspectors working through local agencies provide what "local" inspection is performed relating to food safety.

bii. Nutritional Quality

Issue Identification

Rapidly advancing nutritional knowledge over the past 50 years has brought about improvement in the quality of our diet. This has led to a remarkable decrease, though not the total elimination, of nutritional deficiency diseases. The nutritional improvement in our diet must be maintained and improved by ensuring that nutrients are not destroyed by improper handling, storage, decomposition or unsanitary conditions, and by providing manufacturers who introduce new foods or new food processing techniques with sets of guidelines for maintaining nutritional quality.

The stamp of each culture's cuisine is unique: Americans have hamburgers, the French rich sauces, the Japanese raw fish. Nevertheless, the basic nutritional component, if not the particular dishes, of all diets invite comparisons. Such comparisons reveal that over the last century or so, a consumption pattern sometimes called the 'affluent diet' has taken hold in the industrialized Western Countries.

The affluent diet described here can only flourish where incomes are far higher than a subsistence level and where people have access to a highly productive agricultural system. The affluent diet is one where large amounts of animal proteins and fat as meats and dairy products are consumed and where highly refined sugar and flour have been substituted for bulky carbohydrates like whole grains, fresh fruits and vegetables. In addition, commercially manufactured foods are increasingly chosen over unprocessed products.

By all "traditional" measurements this diet would seem to be satisfactory. It provides generous amounts of protein, key vitamins and minerals. The diet is also protective against the age-old nutritional problems of scurvy and pellagra. However, the link between the way people eat and the incidence of a variety of diseases has cast some doubt on the soundness of the "affluent diet". The most suspect characteristics are its high level of fats, especially animal fats. Most people realize that fats are concentrated in fried foods, butter,

dairy products, etc., but few people realize that fats come in more subtle forms. Meats, especially beef and pork, add a great deal of fat to the diet. In fact, fats now account for 45 to 50 percent of the calories in America's diet.

The type, as well as the amount, of fat that people eat has health implications. High consumption of saturated fats, supplied mainly by animal products, may promote cardiovascular problems and, possibly, some cancers. Unsaturated fats seem to have fewer related health risks.

Financial and health considerations have pushed people to switch from butter to vegetable-based margarines and from lard to hydrogenated vegetable oils. At the same time, however, rising meat consumption has seemingly offset these health benefits. Overall, animal-fat intake remains high and total fat consumption has been driven upward.

Even the grain that remains in the affluent diet is stripped of most of the fiber or roughage. Wheat is usually milled into refined white flour. Raw or lightly cooked fruits and vegetables, which also provide fiber, are increasingly being passed over in favor of canned or frozen foods, which are often overcooked. Those fruits and vegetables that are bought fresh are often peeled or overcooked before they are eaten. Reducing dietary fiber in this manner apparently alters the chemistry of digestion, which in turn may promote various diseases of the digestive system.

Starch intake has also dropped along with the consumption of bulky foods and fiber in the affluent diet, and sugar intake is rising. Traditional societies rarely used refined sugar; recipes calling for sugar were rare in Europe and North America a century back; however, sugar consumption in the United States has grown by half just since 1950. While average persons in the world now eat forty-four pounds of sugar a year, Americans consume over a hundred pounds of sugar a year. As the United States sweet tooth grows, so do its dental bills.

Medical researchers are slowly unraveling the tangled interconnections that link the affluent diet to the various diseases of civilization. Combined with a sedentary life style, high calorie consumption leads to obesity, which in turn encourages diabetes, hypertension, and coronary heart disease. High intake of refined foods such as white flour and sugar may encourage diverticulosis and other conditions, while high salt intake possibly promotes hypertension. (Diabetes and hypertension increase the risk of coronary heart disease and, for those suffering from hypertension, stroke,) a diet high in animal fat fosters arterial problems that can lead to a coronary attack or stroke. Finally, excessive dietary fats may also be linked to the genesis of bowel, breast, prostate, and other types of cancer.

Many doctors and nutritionists studying overnutrition recommend the following changes for those consuming an affluent diet: fat consumption should be reduced considerably and, whenever possible, saturated fats should be replaced by unsaturated fats; cholesterol intake,

especially by men, should be cut radically; sugar and salt intake should be sharply reduced; consumption of whole grains, potatoes and other starchy foods, and fresh fruits and vegetables should be increased; and, above all, personal energy intake and energy expenditure should be kept in balance, in part by calorie budgeting and in part by engaging in more physical activity. Changes such as these do not come easily; for many, they violate lifelong habits and strongly ingrained notions about which foods are healthy and tasty.

Certainly more remains to be learned about diet and health, but as Dr. D. Mark Hegsted of Harvard University observes of problems of data and proof in this field, "one does not need to know all of the answers before one can make practical recommendations." The dietary changes that doctors are prescribing involve no foreseeable health risks; quite the contrary, all evidence points to the great risks involved in clinging to our current diets. The only known risk associated with more prudent diets is that to the food industries that would be affected. But, "While these industries deserve some consideration," remarks Dr. Hegsted, "their interests cannot supersede the health interest of the population they must feed."

Issue Analysis

Protecting Missouri's food supply and ensuring its nutritional adequacy is a major problem. Food protection and safety have become so complex as to defy control by any one level of government. Evaluation of food service establishments and food supplies now involved monitoring both the biological status (bacterial) and physical-chemical (toxic substances) status of food and food handlers. Thus, the traditional "sanitation" activities have been complemented by activities relating to the elimination of possible long-term hazards to human health.

Nutritional adequacy is also a complex concern. Problems of both undernutrition and overnutrition exist in Missouri. However, the establishment of a "perfect diet" is difficult given the varying social and cultural differences among the population.

Recommendations

Goal: All persons in Missouri should be ensured of protection from foodborne diseases and harmful chemicals at food service establishments and from food suppliers and should have an adequate choice of high quality and nutritious food based on social and cultural choice.

Goal: Strict enforcement of food laws should be in effect in 1983.

Objective: All eating establishments should be inspected and censored if necessary on a regular basis.

B. BIOMEDICAL AND CONSUMER PRODUCT SAFETY

B. Biomedical and Consumer Product Safety

Issue Identification

The consumer movement has led to reforms in such areas as advertising, packaging, labeling information, product content, and warranty provisions. Some industries have established positions of consumer representatives. The Federal Trade Commission (FTC) has been much more forthright in its controls of advertising and the Food and Drug Administration (FDA) has made major steps in controlling the safety and efficacy of drugs, cosmetics, and food products. The Consumer Bill of Rights calls for social action by individuals and groups in both the public and private sectors of society.²

Consumer health deals with the decisions individuals make in regard to the purchase and use of the available health products and services that will have a direct effect on their health. It involves the economic, or monetary, aspects of health over which individuals have control. Consumer health includes self-motivated or self-initiated actions, which may include the purchase of a bottle of aspirin tablets or a dentifrice or the selection of a physician, dentist, or nursing home. It is not what health departments or others do to control disease through clinics or information. However, a consumer's decision to use such services or information is consumer health. Positively, consumer health involves the information and understanding that enable individuals to make wise decisions about health services and products. Negatively, it refers to the avoidance of unwise decisions based on frauds, fads, fallacies, and superstitions.^{2, 16}

Many agencies at the federal and state level are involved in assuring the safety and effectiveness of drugs, medical devices and general consumer products. However, the rules and laws determined by the agencies are not always enforced. Two major areas that need to be considered are consumer product safety and biomedical product safety.

Biomedical Product Safety

Prescription drugs and over the counter drugs are regulated and tested by the Food and Drug Administration (FDA) before they can be released for general use. Whereas there is some control over prescription drug usage, there is none for over the counter drugs. Over the counter drug abuse is not uncommon and can lead to severe health problems. Quackery, misleading advertising and false expectations are the major culprits in the abuse and misuse of over the counter drugs and other like substances or apparatus.^{3, 16}

Consumer Product Safety

The subject area of consumer product safety is vast given the great variety of products available in the market. Although the safety of most products is regulated by the federal government failures are inevitable. Misuse is another factor contributing to product safety. The effect of consumer product safety on health can be enormous. Examples of accidents found to result from faulty consumer products or misuse include:³

- Ten thousand television sets catch fire yearly, most of them are color television sets. The risks are greatly increased by poorly insulated wires or other flaws. Manufacturers are now installing fire proof components in television sets.
- Some 100,000 people each year accidentally walk through glass doors causing severe injury to themselves. Safety glass, which crumbles rather than shatters or glass substitutes would reduce the incidence of and severity of cuts.
- More than 200 crib strangulations are reported in one year. The slats on sides of cribs are usually wide enough for infants' bodies but not their heads. Proper precautions should be encouraged.
- There are over 1,000 toys that are unsafe or have unsafe features: The FDA has begun testing toys for potential harm during normal use or foreseeable use.³

The Consumer Product Safety Commission (CPSC) is charged with enforcing product safety regulations at the national level. The main purpose of this program is to reduce a reasonable amount of accidents which occur from unsafe products. The regulations cover a wide range of products from baby rattles to lawn mowers. The CPSC at the federal level receives reports of injuries/deaths related to dangerously manufactured products. It also evaluates the safety of products already on the market. All data collected by the CPSC is presented as national data; there is no information on the level of accidents due to faulty products at the State level. Private groups such as the Consumer Union also work to inform the public about the safety of consumer products.

In Missouri, the Attorney General's office has established a fraud hot line which handles complaints involving fraudulent description, misrepresentation or false advertising of products.

Issue Analysis

A study released by the National Commission of Product Safety noted that consumer products are involved in most household accidents - and those accidents kill 30,000 people annually, permanently disable 110,000, and put 585,000 more in the hospital.^{3, 18}

The seven-man commission, composed of representatives of law firms, business and Government, was appointed in 1968 by President Nixon. Because it has broad bi-partisan support, the group's findings have drawn considerable attention in Washington. They may lead to Government safety controls to replace industry's self-regulation, which the commission sees as "legally unenforceable and patently inadequate."

Consumer products account for 6.8 million injuries in the United States per year. These injuries make up 71 percent of all injuries among the 17-74 year old age group. Children under 16 years old have the highest incidence of injuries due to consumer products. Injuries are responsible for a large number of handicapping conditions in this country, most of which require medical attention for extended periods of time. Several indices (such as the Hazard Index and Product Injuries Index) are available to measure the severity of injury, type of product involved, and other related factors. It would be useful to apply these measures to Missouri data so that preventive measures can be taken.^{2, 15}

As mentioned previously the Bureau of Radiological Health within the Division of Health is responsible for the inspection of X-ray machines in the State to ensure their safety.

Recommendation

Goal: A unified program for enforcement of biomedical and consumer products safety laws be established.

Goal: A public education program should be established jointly by the Division of Health, the Department of Education, and the Department of Consumer Affairs to make the public aware of the safety issues involved in the various biomedical and other consumer products to which they can be exposed.



C. SPECIAL ISSUES

C. Special Issues

The Health Protection section has so far dealt with the effect of the physical, occupational and residential environment on health. Special problems and hazards have been mentioned, health problems have been alluded to; and specific goals and objectives have been set to help reduce the deleterious effects of the environment on health. This final section will re-emphasize the need for prevention and present examples of how chronic diseases are affected by various environmental influences.

A characteristic of developed nations such as the United States is that they have older populations, they have fewer infectious disease problems and more chronic disease problems. Chronic diseases have a devastating toll on communities in terms of loss of productivity, costly medical care and prolonged suffering. Chronic diseases can affect individuals at any stage of life - for example chronic or degenerative conditions of the cardiovascular system cause more deaths among school children than do all other diseases. It is estimated that in the United States one out of every six persons is chronically ill. Four out of the five leading causes of death are lifestyle and environmentally related. Many chronic diseases are preventable, for those that aren't there are means of reducing their more serious consequences.^{6, 7, 13}

Prevention of chronic disease such as atherosclerosis, hypertension and other cardiovascular disease, diabetes, cancer, emphysema and bronchitis needs to be aimed at several strategies: modification of life style; reduction of environmental exposures at home, at the worksite and in general; and community education programs to emphasize the importance of early detection and of health promotion.

Although the exact mechanisms by which chronic diseases arise may not be known, much is known about risk factors which contribute significantly to the onset of disease. For example, smoking, overweight, sedentary life style, consumption of fatty foods and a high salt intake are all high risk factors for cardiovascular diseases. Smoking also contributes to the development of emphysema and bronchitis. Air pollution aggravates not only emphysema and bronchitis but asthma too; severe eye irritation is another consequence of increased air pollution. Occupational exposure to certain chemicals or dusts may also increase respiratory disease problems.^{6, 7}

Public awareness and personal responsibility for potential risk factors are important elements in achieving a reduction in the occurrence of accidents and chronic disease.

During the 1970's, research into causes and risk factors associated with cancer focused strongly on the environment and on variations in the people's lifestyles. The air individuals breathe, the foods they eat, the water they use, the work they do, whether they smoke or not, their social and cultural backgrounds, all have a potential bearing on the individuals chances of getting cancer.^{2, 4}

Cancer is a group of more than 100 diseases that are characterized by abnormal growth of cells. Cancer ranks as the second leading cause of death in the United States and in Missouri. The American Cancer Society (ACS) estimates that there will be approximately 20,000 new cancer cases in 1982, with about 10,000 individuals dying from cancer during that year.¹ Cancer is the only major chronic disease for which the age adjusted mortality rate is increasing in Missouri.¹

If present rates continue, the ACS predicts that one out of every four Americans will eventually have cancer. Of those with cancer one out of every three can expect to live for five or more years after treatment. The outlook for victims depends on several factors: The type of tumor, its location and the extent of spread. Early diagnosis and prompt treatment are the two key elements in improving life expectancy once cancer has developed.¹

About 40 percent of all new cancer cases and cancer deaths can be accounted for at a few major sites: breast, lung and colon-rectum. These cancers should be the main targets for intervention and prevention activities. Public health efforts should be aimed at the State level for these cancers given the proven cost-effective methods of intervention.

Prevention is a complex issue in cancer. Some cancers can be prevented and others can not. For those cancers which can be prevented, individual efforts can and should be aimed at potential risk factors. As mentioned previously, lifestyle, individual susceptibility, the physical, occupational and residential environment all contribute to the risk of developing cancer.^{2, 4, 6, 7}

The most significant contributor to lung cancer is cigarette smoking.³ Lung cancer is perhaps the most preventable of all cancers.¹ Increased efforts should be made so that the public can become more aware of the inherent danger in cigarette smoking. Industries using products, which are known to have a synergistic effect on lung cancer, such as asbestos should have programs to inform workers of this fact and should screen out smokers from working with such products.⁴ In addition, cigarette smoking has also been linked to cancer of the bladder, mouth, larynx and pancreas.

Breast cancer is the leading cause of cancer death in Missouri women, its cause is unknown. For breast cancer the best prevention is early detection. A regular practice of breast self examination is one of the most simple and inexpensive preventive mechanisms ever developed. Other methods for early detection of breast cancer such as mammography, while being efficient in detecting cancer, may not be as cost-effective.* There is, too, the additional risk involved in developing the cancer from excess exposure to radiation. The issue is complex, and before any single statement can be made results of further epidemiological studies should be assessed. In the meantime, promulgation of breast self exam as an effective technique should be encouraged.¹

* The American Cancer Society has established guidelines for when women should be subjected to mammography. The Bureau of Radiological Health also ensures safety of equipment used for chest X-rays.

The preventive measures for colo-rectal cancer are less clear cut. There is evidence that a low fat, high fiber diet may reduce the incidence of colo-rectal cancer. Indeed this diet is also good for reducing cardiovascular disease, hemorrhoids and other chronic diseases. The occult blood stool test is the best early detection test available so far. Individuals age 40 and over should have such a test done in accordance with the American Cancer Society guidelines.^{1, 4}

Alcohol in large amounts increases the cancer risk in the esophagus, mouth, and possibly other sites. In combination with cigarettes it acts synergistically to increase oral cancer risk.

High-dose exposure to ionizing radiation increases the chances of leukemia and skin cancer. The sun's ultraviolet rays cause a majority of superficial skin cancers.

In some rare cases drugs have increased cancer risk. For example, the use of diethylstilbestrol (DES) during pregnancy has been linked to the subsequent development of a rare form of vaginal cancer in a small number of daughters of exposed women. Risk of cancer of the cervix is increased through poor sexual hygiene, intercourse at an early age, and multiple sexual partners. The Pap Smear is recognized as a cost-effective mechanism for early detection of cervical cancer.²

High-dose and long-term exposure to a number of occupational chemicals such as asbestos in insulating and fireproofing and vinyl chloride in plastic production have been shown to increase the risk of cancer.⁴

Air pollution and food additives have not been definitely established as cancer risks. Despite the presence of carcinogenic substances in the atmosphere, there is no firm evidence indicating air pollution as a cause of human cancer. Neither is there conclusive evidence that chemicals added to food increase the risk of any form of human cancer. Poland and Czechoslovakia do not use the food production or preservation means found in the United States, yet their cancer rates are similar to or higher than those in this country.^{2, 7, 19}

The individual must be made aware of the myriad of simple things that can be done to avoid accidents and disease. The potential for intervention is clear. What remains to be done is the development of a coordinated system at the State level involving agencies such as the ACS, the American Heart Association and others in setting up effective prevention and public education programs.



RECOMMENDATIONS

Goal: By 1983, the Planning Committee of the MHCC should establish an Environment Task Force charged with addressing both environmental and preventive areas of concern by encouraging coordination of the work of all public and private agencies involved in health care.

Goal: By 1983, the Missouri SHPDA should establish, through cooperation with the Division of Environmental Quality and other appropriate agencies, an interagency council on environmental health charged with coordinating and managing state agency activities related to environmental health.

Goal: By 1984, cancer should be established as a reportable disease with cancers being reported to the Missouri Cancer Registry.

Goal: By 1984, an Epidemiology Surveillance Team should be established within the Division of Health (and in cooperation with other state agencies) to monitor and investigate environmentally produced diseases and unusual occurrence of diseases in time-space cluster.

Goal: Encourage wellness, health promotion, lifestyle modification and insurance incentives through appropriate resources such as health fairs, private industry and insurance companies, etc.



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B. FOOD PROTECTION AND FOOD QUALITY

3. Food Protection

a. Sanitation and Safety

One of the basic needs of man is a safe, wholesome, and nutritious supply of food. Without assurance of such a supply, the health and well being of the consumer is impaired. Food can be a vehicle of disease transmission, sources of toxins, poisons, and the cause of malnutrition or oftentimes overnutrition.

It is estimated that from two to ten million people in this country contract some form of microbial foodborne disease annually. The economic loss to the country as a result of this problem, in terms of the drain on our medical resources as well as the lost productive effort, amounts to many millions of dollars each year. The development of new foods and the widespread use of new technological procedures in the food industry have contributed to the proliferation of products whose impact on public health is relatively unknown. The use of filthy or decomposed raw materials or insanitary conditions in food manufacture and processing permits possible health hazards to exist in the finished products.

Rapidly advancing nutritional knowledge over the past 50 years has brought about improvement in the quality of our diet. This has led to a remarkable decrease, though not the total elimination, of nutritional deficiency diseases. The nutritional improvement in our diet must be maintained and improved by ensuring that nutrients are not destroyed by improper handling, storage, decomposition or unsanitary conditions, and by providing manufacturers who introduce new foods or new food processing techniques with sets of guidelines for the nutritional quality.

The protection of the nation's food supply is a major problem throughout the country. Food protection has become sufficiently complex to almost defy complete control at any one level of government. Sanitation problems can occur in any of the 45,000 food processing establishments, or among 25,000 manufacturers, warehouses, and other types of firms. In addition, there are approximately 500,000 restaurant-type food service establishments in the United States in which contamination can occur.

There is a need to coordinate and strengthen the existing programs to provide more comprehensive protection throughout the food processing chain, delivery to the market place, and to the ultimate consumer. Environmental health agencies have a responsibility to see that this protection is provided, whether directly through their operation or through the efforts of other competent agencies.

The primary elements which comprise the mission of a food protection program are:

1. to assure a wholesome and clean food supply free from unsafe bacterial and chemical contamination, filth, and natural or added deleterious substances;

2. to assure adequate nutrition to the consuming public by ensuring compliance of foods with established nutritional quality guidelines, and with standards of quality and identity, and by ensuring that foods marked for special purposes are suitably labeled to fully inform the consumer as to their nutritional attributes for that purpose; and
3. to reduce foodborne disease transmission and prevent significant microbiological and chemical contamination and decomposition during production, processing, distribution, storage, preparation, and service.

Because of the broad spectrum of problems involved in food sanitation and safety, it is not feasible to enumerate all areas of concern; however, certain primary areas warrant the attention of the State and local food regulatory agencies.

The chemical entities comprising those constituents of foods that are pertinent to food safety encompass a wide spectrum of substances that are introduced into foods through a number of routes. Such substances can be categorized into two groups: 1) those present as naturally-occurring components or contaminants; and 2) those added by man in the course of food manufacture or preparation.

From the standpoint of toxicology, the breadth of this field makes it difficult to single out individual substances or even groups of related substances for attention. A comprehensive list of the known chemicals comprising the entire group of naturally occurring toxicants and intentional or accidental additives in foods encompasses a vast array of chemical types. Consideration of this broad range of substances reveals many problems of public health significance which require further research effort. In the sections that follow, a list of primary problems have been identified that require immediate attention; it should be recognized, however, that many other important problems exist.

Microbiological contamination: it is estimated that approximately ten million persons suffer from foodborne illness annually. Salmonellosis, shigellosis, illness due to *C. perfringens*, *Vibrio* and viruses, food poisonings caused by staphylococcal enterotoxins and botulinal toxins typically are transmitted through contaminated foods. Development of new foods, changing distribution systems, centralizations of food processing, and the widespread use of new technological practices and process control procedures have resulted in the potential for foodborne illnesses. Illness associated with food prepared in restaurants and catering establishments is a continuing serious problem.

Problems of food sanitation and safety are characterized by the use of filthy or decomposed raw materials or by unsanitary conditions in food manufacture and processing plants which permit finished product contamination. This contamination often indicates more serious condi-

tions that may have detrimental health implications. Thus, when viewed in its proper context, "sanitation" is an integral part of all other food programs. Sanitation problems can occur in any of the food establishments in the United States. Over half of these firms handle food products especially susceptible to microbiological contamination or decomposition.

Chemical Additives Contamination: Among the non-nutrient constituents added to foods by man are substances intentionally placed or produced, in foods by the application of some form of processing. Also included are those components of food that occur as residues for seed, soil, or crop treatment or as residues of animal feed additives. The utilization of food additives has increased drastically in the past ten years. It is estimated that the average American consumes three pounds of chemical additives in his food each year.

Here the problem in food protection includes assurance that the additive performs its intended use only, and that the maximum level of each additive introduced into the total food consumed is known and does not exceed an established tolerance for that additive. It is also important to be certain that only approved additives are used.

The long-term ingestion of naturally occurring substances, toxic mold metabolites, such as aflatoxin (a human toxic carcinogen), fish and other marine toxins and toxic substances is potentially harmful. In addition, certain essential nutrients may be used in excessive and potentially toxic amounts because of ignorance, abnormal taste or well-meaning zeal for good nutrition. These include salt in foods for infants and adults, various amino acids for flavor or technological use, and vitamins, A, D, K, folic acid or some of the mineral essentials.

The components of food which are intentionally added are well-characterized, both chemically and biologically. However, such additives constitute only a very small fraction of the food supply. No segment of the environment to which humans are exposed is as chemically complex as food, yet knowledge of the intrinsic chemical components of food, except for the nutrients, is very poor.²⁵

While it is generally assumed that the natural components of food, even those known to be toxic, do not constitute a health hazard, there is very little information on the toxic effects resulting from ingestion of these compounds. Simply because these foods have been consumed for many centuries without obvious health effects is not sufficient reason to conclude without appropriate investigation that these substances are innocuous.

Substances identified as having at least a minimal effect on food safety are listed below:

- a. Plant toxins
- b. Marine toxins
 1. PSP "red tide"

- c. Fungal toxins
 - 1. aflatoxin
- d. Intentional food additives
 - 1. nitrates
 - 2. nitrites
 - 3. nitrosamines
 - 4. sodium chloride and phosphates
- e. Food Contaminants
 - 1. mercury
 - 2. lead
 - 3. cadmium
 - 4. other trace elements
- f. Organic Contaminants
 - 1. pesticides (DDT, dieldren, etc.)
 - 2. herbicides

Nutritional quackery (i.e., deceptive and misleading claims in labeling) is a major problem and is estimated to cost American consumers as much as \$500 million a year. This estimate of \$500 million does not cover the area of slack fill, poor quality, substitution of cheaper ingredients for more expensive ingredients, low drained weights, etc. Adequate food standards serve to protect the health as well as the pocketbook of consumers, particularly those who otherwise might fail to obtain the expected nutrients in a diet which is already marginal or submarginal.

Another problem is the protection of the nutrients in food from loss due to improper storage, excessive shelf life, rancidity, or new technological processes. This is especially serious in foods promoted specifically for their nutritional values. Additionally, individuals responsible for food preparation and handling in public eating establishments should be made aware of the importance of protecting foods from nutritional deterioration through poor handling during preparation. This problem has not yet been adequately explained to the food service industry and poor food handling techniques are still a common practice in food service establishments.

Current System

Missouri has approximately 5,943 food service establishments. Present estimates indicate that one meal in three is consumed away from home and projections are that this will increase into the 1980's. The amount, type, and quality of the food consumed, given these projections, becomes very important from a public health perspective.

To enforce legislation designed to protect the public from food-borne illness and unwholesome food, the State Division of Health certifies both state and local health department sanitarians and inspectors who have the responsibility to enforce Missouri's Public Health Code.

As seems to be the case in many states, establishments are not being inspected as mandated. The State Division of Health and local health departments do not have adequate staff to do this job as they would like. Compounding these problems is the fact that personnel involved in food service programs at both local and state levels also have other responsibilities e.g., housing, water supply, sewage disposal.

Food safety activities center around Federal laws and National enforcement. The Delaney clause as promulgated by the Food and Drug Administration provides for determination of carcinogenicity of additives in cosmetics and foodstuffs. Little enforcement on the state level takes place. Federal inspectors working through local agencies provide what "local" inspection is performed relating to food safety.

b. Nutritional Quality

"The stamp of each culture's cuisine is unique: Americans have hamburgers, the French rich sauces, the Japanese raw fish. Nevertheless, the basic nutritional component, if not the particular dishes, of all diets invite comparisons. And such comparisons reveal that over the last century or so, a consumption pattern sometimes called the 'affluent diet' has taken hold in the industrialized Western Countries."²⁶

The affluent diet described here can only flourish where incomes are far higher than a subsistence level and where people have access to a highly productive agricultural system. The affluent diet is one where large amounts of animal proteins and fat as meats and dairy products are consumed and where highly refined sugar and flour have been substituted for bulky carbohydrates like whole grains, fresh fruits and vegetables. In addition, commercially manufactured foods are increasingly being chosen over the unprocessed products.

By all "traditional" measurements this diet would seem to be satisfactory. It provides generous amounts of protein (even excessive amounts), key vitamins and minerals. The diet is also protective against some of the age-old nutritional problems of scurvy and pellagra. However, the link between the way people eat and the incidence of a variety of diseases has cast some doubt on the soundness of the "affluent diet." The most suspect characteristics are its high level of fats, especially animal fats. Most people realize that fats are concentrated in fried foods, butter, dairy products, etc., but few people realize that fats come in more subtle forms. Meats, especially beef and pork, add a great deal of fat to the diet. In fact, fats now account for 45 to 50 percent of the calories in America's diet.²⁷

The type, as well as the amount, of fat that people eat has health implications. High consumption of saturated fats, supplied mainly by animal products, may promote cardiovascular problems and, possibly, some cancers. Unsaturated fats seem to have fewer health risks, but they also appear dangerous when consumed at high levels.

Opposing forces have influenced the consumption of vegetable and animal fats. Financial and health considerations have pushed people to switch from butter to vegetable-based margarines and from lard to hydrogenated vegetable oils. At the same time, however, rising meat consumption has seemingly offset these health benefits. Overall, animal-fat intake remains high and total fat consumption has been driven upward.

Even the grain that remains in the affluent diet is stripped of most of the fiber or roughage. Wheat is usually milled into refined white flour. Raw or lightly cooked fruits and vegetables, which also provide fiber, are increasingly being passed over in favor of canned or frozen foods, which are often overcooked. Those fruits and vegetables that are bought fresh are often peeled or overcooked before they are eaten. Reducing dietary fiber in this manner apparently alters the chemistry of digestion, which in turn possibly promotes various diseases of the digestive system.

Starch intake has also dropped along with the consumption of bulky foods and fiber in the affluent diet, and sugar intake is rising. While few traditional societies use refined sugar at all, and recipes calling for sugar were rare in Europe and North America a century back, high sugar consumption in the U.S. has grown by half just since 1950, and the average person in the world now eats forty-four pounds of sugar a year. Americans consume over a hundred pounds of sugar a year. As the U.S. sweet tooth grows, so do its dental bills. An obvious contributor to tooth decay, high sugar consumption may -- some researchers contend -- also be linked to obesity, diabetes, and other diseases.

"As the affluent diet has spread, so have many once rare diseases such as coronary heart disease, diabetes, diverticulosis, and bowel cancer. Confined primarily to those leading the life styles of the developed Western world, these ailments have been appropriately tagged the "diseases of civilization." Where they prevail, improved sanitation and ample food supplies have largely stamped out fatal infections and undernutrition -- which have been replaced by modern diseases that strike not only the old. Some ingredients of modern Western life -- and dietary factors are among the leading suspects -- are abetting these killers.

Medical researchers are slowly unraveling the tangled interconnections that link the affluent diet to the various diseases of civilization. Combined with a sedentary life style, high calorie consumption leads to obesity, which in turn encourages diabetes, hypertension, and coronary heart disease. High intake of refined foods such as white flour and sugar may encourage diverticulosis and other conditions, while high salt intake possibly promotes hypertension. (Diabetes and hypertension, sometimes directly lethal, greatly boost the risk of coronary heart disease and, for those suffering from hypertension, stroke.) A diet high in animal fat fosters arterial problems that can lead to a coronary attack or stroke. Finally, excessive dietary fats may also be linked to the genesis of bowel, breast, prostate, and other types of cancer.

Many doctors and nutritionists studying overnutrition recommend the following changes for those consuming an affluent diet: fat consumption should be reduced considerably and, whenever possible, saturated fats should be replaced by unsaturated fats; cholesterol intake, especially by men, should be cut radically; sugar and salt intake should be sharply reduced; consumption of whole grains, potatoes and other starchy foods, and fresh fruits and vegetables should be increased; and, above all, personal energy intake and energy expenditure should be kept in balance, in part by calorie budgeting and in part by engaging in more physical activity. Changes such as these do not come easily; for many, they violate lifelong habits and strongly ingrained notions about which foods are healthy and tasty.

A national strategy to counter overnutrition, like one to eliminate undernutrition, must involve a wide range of policies, not all of them directly linked to food and agriculture. In the U.S., the marketplace

has its own set of priorities, and health is not one of them. Nutrition planning must include the development of economic incentives and institutions that encourage healthy food-production and consumption patterns.

With afflictions such as coronary heart disease, whose development spans decades and is obviously influenced by many factors, the exact role of any one factor necessarily remains elusive. However, that aspects of the affluent diet promote atherosclerosis and heart disease, the leading killers in the U.S., has been proven beyond reasonable doubt. The understanding of dietary influences on other diseases such as cancers of the bowel, breast, and prostate is much less advanced. Yet, the dietary changes that the leading theorists of cancer causation call for are precisely those that help reduce the threats of heart disease and obesity.

Certainly more remains to be learned about diet and health, but as Dr. D. Mark Hegsted of Harvard University observes of problems of data and proof in this field, "one does not need to know all of the answers before one can make practical recommendations." The dietary changes that doctors are prescribing involve no foreseeable health risks; quite the contrary, all evidence points to the great risks involved in clinging to our current diets. The only known risk associated with more prudent diets is that to the food industries that would be affected. But, "While these industries deserve some consideration," remarks Dr. Hegsted, "their interests cannot supersede the health interest of the population they must feed."²⁹

Conclusions

Protecting Missouri's food supply and ensuring its nutritional adequacy is a major problem. Food protection and safety have become so complex as to defy control by any one level of government. Evaluation of food service establishments and food supplies now involve monitoring both the biological status (bacterial) and physical-chemical (toxic substances) status of food and food handlers. Thus, the traditional "sanitation" activities have been complemented by activities relating to the elimination of possible long-term hazards to human health.

Nutritional adequacy is also a complex concern. Problems of both undernutrition and overnutrition exist in Missouri. However, the establishment of a "perfect diet" is difficult given the varying social and cultural differences among the population.

Goals, Objectives, and Actions

GOAL: ALL PERSONS IN MISSOURI SHOULD BE ENSURED OF PROTECTION FROM
FOODBORNE DISEASES AND HARMFUL CHEMICALS AT FOOD SERVICE ESTABLISHMENTS
AND FROM FOOD SUPPLIERS AND SHOULD HAVE AN ADEQUATE CHOICE OF HIGH
QUALITY AND NUTRITIOUS FOOD BASED ON SOCIAL AND CULTURAL CHOICE.

C. OCCUPATIONAL HEALTH AND SAFETY

4. Occupational Health and Safety

That jobs might be hazardous is not a new idea. However, until quite recently, both workers and lawmakers failed to grasp the problem's scope. "Occupational health" once usually referred to the attempt by management or unions to limit the number of limbs lost to machinery, eyes damaged by chemical sprays, or lives lost in explosions or mine cave-ins. Although numerous laws have governed industrial safety (e.g., OSHA), the threat of on-the-job accidents remains real enough. In 1971 in the United States, calculates Nicholas A. Ashford, more than one in forty industrial workers died or suffered a reportable injury on the job. In that year, reported accidents at nonagricultural workplaces in the United States caused more than 14,000 deaths, over 100,000 permanent disabilities, and upwards of two million temporary injuries.³⁰

As big a problem as it is, the "traditional" threat of industrial accidents looks small beside that posed by the occupational diseases that medical researchers are now identifying. The U.S. Public Health Service has estimated that 390,000 new cases of occupational disease appear annually in the United States while up to 100,000 occupational disease-induced deaths occur each year. Because many occupational illnesses develop slowly, the dimensions of occupational disease remains relatively unknown. The more the problem is studied, the more pervasive it seems to be.

Occupational health hazards to which workers may be exposed are usually classified into the following categories:

- a. Toxic chemical agents such as solvents, dusts, gases, metallic compounds, plastics and synthetic resins, and pesticides.
- b. Physical agents or energy stresses such as excessive noise, temperature extremes, vibrations, pressures, and ionizing radiations.
- c. Biological hazards such as infectious agents and enzymes.
- d. Other work-related stresses such as rigors of work process, equipment design, workplace layout, relationship between capabilities and tolerances of the individual worker and the demands and stresses of the job.

As a rule, occupational skin diseases are numerically the most prevalent of occupational diseases, the pneumoconioses are the most costly from the standpoint of workmen's compensation, and occupational poisonings continue to increase, despite the existence of knowledge for controlling them.

The breadth of the occupational health problem, including both accidents and diseases, is difficult to comprehend. Workers in an industrialized society such as ours face special health risks. As a consequence, we see both short and long-term occupational hazards in nearly every profession.

Miners face the highest health risks from both the standpoint of accidents and mine disasters and disability or death from chronic lung diseases due to mineral dusts. They also have higher than normal cancer rates.

Industrial workers face a host of hazards, some new and some old. The hazards range from inhalation of toxic chemicals to loss of hearing from incessant loud noise. This same group lives under noise-related stress that may promote cardiovascular and neurological disorders. The petrochemical and plastics industries have also exposed workers to a whole new set of hazards. The long term health effects of the many hundreds of thousands of chemicals in industrial use are not known.

Agricultural workers rank alongside miners as a group manifesting a disproportionate share of occupational injuries and illnesses. While constituting only 4.5 percent of the labor force in the U.S. in 1971, farm workers accounted for approximately 16 percent of the country's recorded occupational deaths and 9 percent of the record injuries.³¹ Only mine and construction workers have worse records. Farm worker poisoning by pesticides and herbicides is also an enormous and considerably underestimated problem. Most pesticide induced maladies are either never brought to a doctor's attention, inaccurately diagnosed, or unreported due to the temporary nature of the malady.

Occupational diseases that afflict women constitute another health category. While women constitute an ever increasing percentage of the national workforce, all but a small fraction of occupational medical studies have involved male subjects, and little is known about sexual differences in the response to toxic substances. At the turn of the century, well publicized abuses of women (and children) in unsafe workplaces spawned laws designed to protect them. Today, however, many new questions about women's occupational health are being raised as more and more women risk exposure and as our medical understanding of toxic substances grows.

The potential for fetal exposure to dangerous substances or radiation is especially high. In the United States alone, many women of childbearing age are exposed on the job to chemicals and metals that might cause birth defects, cancer, miscarriages, or possibly, behavioral problems. While the developing fetus is considered more sensitive than an adult to hazardous agents, sufficient knowledge on which to base allowable exposure standards for pregnant women have not been established. Given the uncertainties, the current trend in some industries is to bar all fertile women categorically from jobs that entail a chance of fetal damage. However, women continue to move into industrial jobs traditionally held by males and, in addition, some factories and shops

traditionally employ mainly female workers. In both cases, women have the same needs as men -- for close medical attention to potential hazards, open access to information about hazards, and for all possible safeguards.

Health hazards in workplaces, like overall environmental degradation, represent production costs that have seldom been counted, let alone billed to those responsible for them. Interjecting both worker and community health considerations more fully into economic decisions will promote better work protection. It will also insure that, when prevention fails, workers will be more justly compensated for their unwitting sacrifices.

Current System

Within the last decade, occupational health has become an issue to more people whether they be professionals, scientists, workers, or government. The occupational origins of some cancers and lung afflictions have also been more widely understood. Unions and management both have begun to show serious interest in the long term disease threats as well as traditional job safety.

The passage in 1970 of the Occupational Safety and Health Act and in 1976 of the U.S. Toxic Substances Control Act has moved the States, if haltingly, toward a more systematic approach to the occupational health problem. In Missouri, the majority of the responsibility for ensuring workplace safety still rests with the Federal government. The imperative of profits usually conflicts in the short run with worker protection and "unless all producers . . . are forced to comply with . . . national standards, competing advantage may flow to the producers that are least responsive to workers health needs."³²

Conclusions

All indications are that a multitude of occupational influences on disease, especially those that promote cancer, have defied detection. It is also evident that even known threats are not being dealt with directly. Individual attitudes and worker behavior are also important considerations. In summary, balancing the benefits of producing a particular product against long-term, imprecise health risks that production can entail is as much a matter of personal and social judgment as it is of economic analysis.

Goals, Objectives, and Actions

GOAL: TO ENSURE AN OCCUPATIONAL ENVIRONMENT WHICH CONTRIBUTES POSITIVELY TO THE HEALTH AND WELL BEING OF WORKERS, THEIR FAMILIES, AND THE STATE AT LARGE, THROUGH ELIMINATION OF RISKS OF ILLNESS AND INJURY IN THE OCCUPATIONAL ENVIRONMENT AND SURROUNDING AREA.



D. RADIATION SAFETY

5. Radiation Safety

Mankind is continuously bathed in a sea of radiation from naturally occurring sources such as the ground (terrestrial), other space (cosmic), and the food consumed. Man has added to these sources of radiation through nuclear weapons testing, air travel, watching TV, smoking, using natural gas for space heating and cooking, medical diagnosis and therapy, etc. Today the average person in Missouri can get a radiation exposure that ranges from 130 millirem/year from natural unavoidable sources to up to 272 millirem/year when the other sources mentioned above are included.

A variety of uses of nuclear radiation such as medical, educational, and industrial have created additional sources for radiation exposure. Major sources (such as medical) can contribute significant (more than 20 percent of natural background radiation) exposures to patients.

Table III-EH-3 shows the relative exposures and sources of both natural and man-made occurring radiation (see also Environment and Cancer).

Exposure to radiation can result in biological damage which may not be immediately apparent. The damage manifests itself in various ways and the effects of exposure vary widely depending upon type of radiation and duration, magnitude, and portion of the biological system exposed (see Figure III-EH-1). There are delayed somatic effects such as leukemia, reduced life span, precancerous lesions, and neoplasms which do not appear for years following an acute or chronic exposure. There are also genetic effects (mutations affecting progeny of irradiated persons) which do not become apparent for many generations.

The health significance of any specific source of radiation is related to (a) number of sources in use, (b) anticipated growth rate, (c) population at risk, (d) relative toxicity, (e) length of exposure, and (f) totality of radiation sources within the environment. Problem areas include:

1. Electronic devices capable of producing radiation incidental to their use or which may emit radiation by design. These include but are not limited to devices used for medical diagnosis and therapy, educational purposes, commerce and industry (e.g., lasers, X-ray diffraction) and devices used in the home (e.g., television receivers, microwave ovens).
2. Radioactive materials used for medical, industrial, educational and other purposes.
3. The effects on the environment and the population of discharges of radioactive wastes from nuclear power plants, nuclear fuel reprocessing plants, nuclear explosives, transportation of nuclear wastes, and radioactive waste disposal.

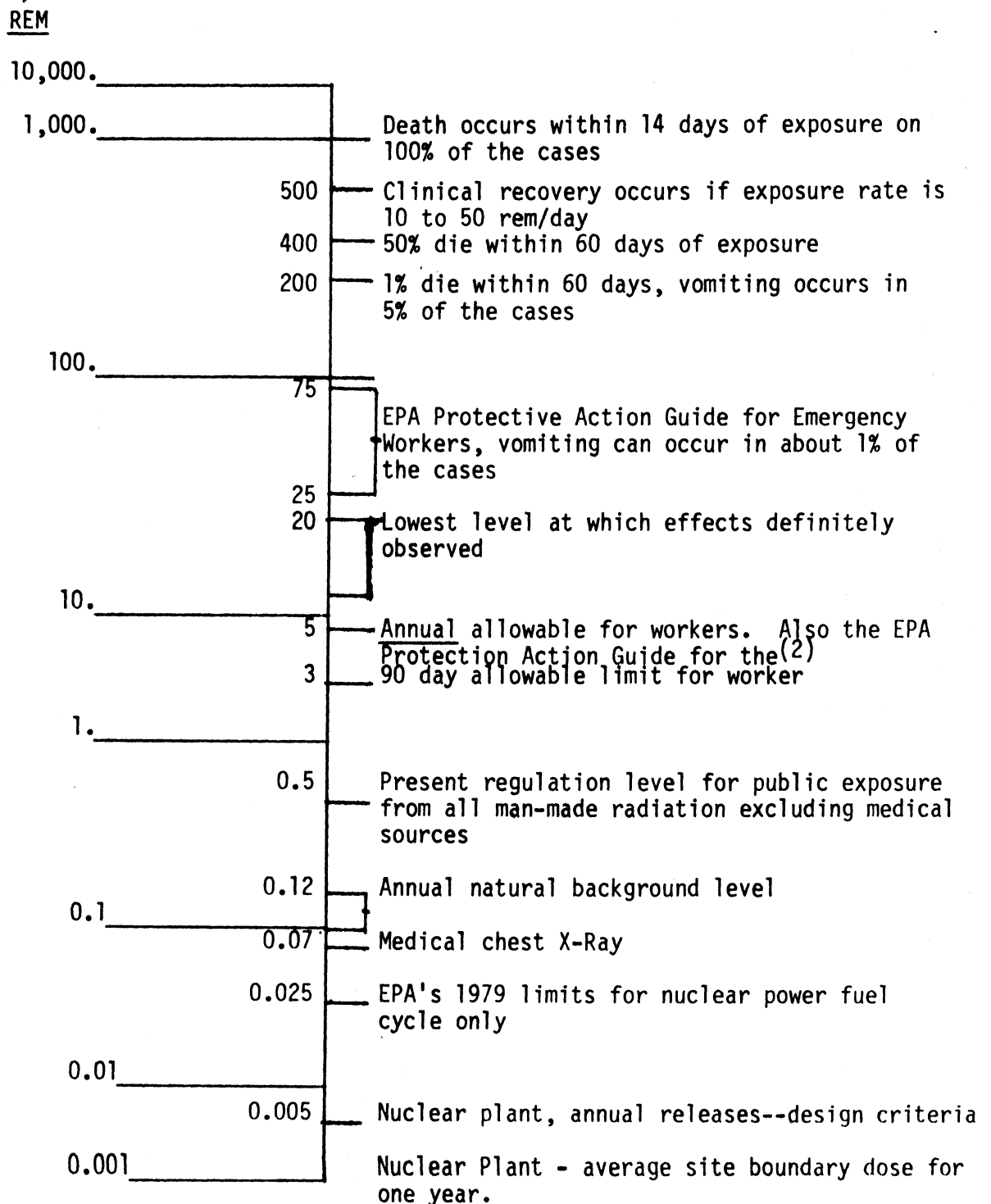
TABLE III-EH-3
Sources of Radiation

	Millirem/Year, Person	Total Annual Exposure to the Average Person Millirem/Year
A. <u>Cosmic</u> (sky)		
Connecticut and Massachusetts	40	40
Colorado	120	
B. <u>Terrestrial</u> (ground)		
Connecticut	60	
Massachusetts	75	115
Colorado	105	
C. <u>Internal</u> (from our bodies)	25	140
D. <u>Fallout</u> (Nuclear weapons tests)	4	144
Total (Per Person)		
Connecticut	129	
Massachusetts	144	144
Colorado	254	
E. <u>Other Sources</u>		
(1) Residents of wood houses	29 to 100 (Use 50)	194
(2) Residents of granite houses	75 to 300	
(3) Smokers - lung	210	
- whole body	30	
(4) Natural gas in homes		
Cooking - lung	15	
Heating - lung	54	
(5) Watching TV	2	196
(6) Air travel (round trip cross country)	4	200
(7) Chest X-Ray	72	272
(8) Nuclear power plant (within 10 miles)	0.1	

Source: Environmental protection Agency.

III-RS-3

FIGURE III-EH-1
WHOLE BODY--RADIATION DOSE EFFECTS⁽¹⁾
(1 REM = 1,000 Millirem)



NOTES:

- (1) Unless otherwise noted the total exposure occurs within a few hours to a day.
(2) 0.04% chance of incidence of cancer (BEIR Report).

SOURCE: Environmental Protection Agency.

Recent studies have indicated that there are a great number of unknown variables and a great number of problems related to the longterm effects of exposure to low level radiation hazards.

Overirradiation due to excessive utilization of diagnostic X-rays exposes humans to more radiation than television and jet travel combined. Common routine examinations (utilizing X-rays) are usually conducted on the grounds that people with unsuspected illness can have them diagnosed and treated at an early state. "However, regular examinations cost money, direct resources from other health programs, and in the case of X-rays, involve some degree of risk."³³ Even though use of X-rays have been of great benefit to many people, their potential dangers to our health must be considered before a decision to conduct an exam is made.

Ineffective and sometimes misutilized radiotherapy techniques are possibly more of a hazard than a cure when used for treating malignant tumors.³⁴ The side effects of cancer treatments are widely known. Survival rates for persons treated through therapeutic X-ray techniques are coming under renewed scrutiny and questions have been raised as to the overall efficacy of many therapeutic techniques.

Nuclear power plants and their associated health hazards have also come under severe scrutiny (see Environment and Cancer). This technology once thought of as "benign" and relatively inexpensive is now being judged as very costly and very dangerous to human health.³⁵ Through the generation of low-level radioactive wastes and highly toxic fission products (e.g., plutonium) and the likelihood of an accident due to either natural or man made causes, utilization of nuclear power is questionable in its long term positive health effect on society. The accompanying support system of fuel reprocessing plants and a transportation system enhance the likelihood of environmental exposure (see bibliography for specific reference and analysis). For example, a General Accounting Office report released in August, 1978, found that on-site "waste treatment system operational problems have increased the potential of worker exposure to unnecessary radiation and have caused unplanned releases of waste to the environment." The report went on to site a number of important factors related only to the one problem of regulation of on site nuclear waste disposal. As discussed earlier in the Environment and Cancer section, the greatest radiation hazard from nuclear electrical generating plants is the problem of safe storage of extremely radioactive wastes for extremely long periods of time. With some waste products having half-lives of 200,000 years there is an understandable lack of knowledge of how to contain such hazardous waste.

As we project into the future, our ability to retard radiation induced disease does not seem promising. As emphasized, the storage and transportation of spent nuclear wastes from nuclear power plants is a particular health problem this agency sees as being unsolvable with the present state of the art. Until a method of disposing of waste products that are hazardous for thousands of years is developed, the potential for environmentally induced negative physiological responses will heighten. In all cases of man-made uses of nuclear radiation, the good in terms of societal benefits must be weighed against potential harm.

Current System

The Bureau of Radiological Health in the Missouri Division of Health is charged with the monitoring and inspection of equipment utilizing or emitting ionizing radiation (see Diagnosis and Treatment, Radiological Overview, page III-DR-1). No Missouri agency is directly involved with the inspection of nuclear power plants or other facilities utilizing radioactive material or has the responsibility for an assessment of their eventual positive or negative effects on man or the physical environment. A report developed in mid 1977 by the Missouri Department of Natural Resources, succinctly summarizes the activities in Missouri related to identification of potential and actual radiation hazards. Sections of that report are excerpted for inclusion here.

RADIATION FACT SHEET

Facilities Using Radioactive Material

Manufacturers - The state has two major manufacturers of radiopharmaceuticals and radiochemicals:

Industrial Nuclear Company, industrial processor of
radiopharmaceuticals
9641 Lackland Road
St. Louis, Missouri

Mallinckrodt Chemical Works, industrial processor of
both
2703 Wagner Place
St. Louis Missouri

Reactors - The state has two university-operated reactors, one located at Rolla and one located at Columbia.

Power Plants - Missouri has no nuclear power plants at present. Missouri's first plant is being constructed by Union Electric in Callaway County. Uneasiness over this reactor due to the experience at the 3-Mile Island reactor is causing re-evaluation of the need and efficacy for construction of the Callaway facility. Missouri is also vulnerable to radiation exposure from two outstate nuclear power plants. One of these plants is the Quad Cities Plant in Cordova, Illinois, on the Mississippi River upstream from St. Louis. The other is the Cooper Nuclear Station just across the Missouri River in Brownville, Nebraska. The wind direction at this plant is into Missouri 66 percent of the time, and the water supply for St. Joseph is only 80 miles downstream.

Fuel Fabrication - One fuel fabrication plant operates in Missouri: Combustion Engineering Plant, Hematite, Missouri. This plant converts uranium hexafluoride (UF₆) powder, which is then molded into fuel elements for light water reactors. It uses about 1,833 pounds of UF₆ per day, and because of the small weight changes during the conversion

process, produces approximately 1,800 pounds per day of UO_2 . These uranium compounds have a low level of radiation; how low depends on the type of uranium isotope contained in the compound. In addition to its potential for radiation, it should be noted that uranium hexafluoride is toxic to humans.

Hospitals - Several hospitals in the state use radioisotopes and radiopharmaceuticals. A survey of one of the major hospitals in St. Louis indicated that they were using the following types of radioisotopes: H_3 (Tritium), Phosphorus³², Iodine¹²⁵, and Iodine¹³¹.

Radioactive Shipments

Radioactive materials are currently being transported into and out of the State of Missouri. Some of these materials are merely shipped through the state. For example:

1. The Kerr-McGee facility at Gore, Oklahoma, ships uranium hexafluoride through the state on a weekly basis. They use Interstate 44 to transport these materials through Missouri to a facility in Ohio.
2. The Federal Energy Research and Development Administration routes radioactive materials through Missouri. These include seven rail shipments and three truck shipments through Missouri per month.

Other shipments either originate or have their final destination in Missouri. Among these are:

1. Shipments of uranium hexafluoride to Combustion Engineering. These take place on a weekly basis. The route used appears to be Interstate 70.
2. Shipments from the research reactor at Columbia. These shipments include: an annual shipment of spent fuel to the Nuclear Regulatory Commission's Savannah River facility in South Carolina, a small weekly shipment by truck or mail to Monsanto, and a weekly shipment of the radioisotope Molybdenum 99 (half-life = 68 hours) to Mallinkrodt who provide their own transportation.
3. Shipments from Mallinkrodt. This company sends some 500,000 pharmaceutical shipments per year by common carrier.
4. Shipment by Radio Pharmacy of Kansas City to various users in the State.
5. Shipments out of the state from Combustion Engineering Plant which manufactures fuel pellets.

6. Shipments from various hospitals in the state. One major hospital indicates that it ships its waste to Nuclear Engineering Company's site at Springfield, Illinois. Their shipments occur bi-weekly and vary in volume from 80-100 cubic feet and in the level of radiation. The radioactivity of sample shipments varied from 1.79 millicuries to 100 millicuries.

Tri-State Motor Transit, one of the largest shippers in the country of radioactive materials, is also located in the State of Missouri (Joplin, Missouri). Tri-State handles highly radioactive spent fuel shipments. However, most of their shipments are routed around the state because the weight limits for trucks on Missouri highways prevent Tri-State from transporting their 105,000 pound loads on Missouri highways.

Radioactive Wastes

Low-level radioactive wastes are being or have been dumped at various locations in the state. The known disposal sites are:

1. The West Lake Landfill and Latty Road sites in St. Louis County.
2. Four pits and a quarry located at the Weldon Springs complex in St. Charles county. These sites are owned by ERDA and the Army, and they contain a considerable amount of waste in an uncertain state of decay.
3. Sinclair Farms where low-level waste from the University Research Reactor at Columbia are buried.

Recently, some incidents at some of these sites have brought the disposal procedures and potential hazards of this dumping to the attention of Missourians. Among those are:

1. Problems at the Weldon Springs complex in St. Louis in 1976.
 - a. Both the Missouri and Mississippi Rivers were receiving low-level radiological contamination from surface streams flowing from the radioactive waste pits at the complex.
 - b. The majority of the buildings and structures at the complex were still in need of decontamination before they could be released for public use. Three of these buildings could not even be released after approximately \$3 million was spent decontaminating them.
 - c. Radiological contamination had migrated beyond the first fence-line of the site at at least two locations.

2. Confusion over the 1973 dumping of 9,000 tons of radioactive material in the West Lake Landfill at St. Louis.

These incidents reveal several interesting facts about disposal procedures. First, the sites do not have to be licensed, nor does the Nuclear Regulatory Commission issue permits for many types of sites. In fact, they had not issued permits for any low-level burial sites in Missouri prior to these incidents. Secondly, a great deal of this waste material is buried in large trenches from which the wastes migrate into the surrounding area if soaked by large amounts of water. This poses problems since some of these wastes take 250,000 years to reach a nonhazardous status. Finally, the monitoring of those sites which are licensed is highly questionable. For example, in dealing with these cases, it was discovered that detection standards for determining when the migration of radioactive materials has reached unacceptable health and safety levels were practically nonexistent.

Radiographic Equipment

There are approximately 530 flourosopes and 6,000 X-ray machines in the State of Missouri. These machines, if not properly maintained, can expose people to damaging doses of radiation.

In-State Programs

The most extensive radiological protection activities in the state are X-ray inspection program and the air and water monitoring program. These programs are housed in the Department of Health, Bureau of Radiological Health whose staff consist of two inspectors and an acting director.

The Bureau of Radiological Health's performance in these programs is mixed. Their air and water environmental programs seem to be adequate. The air-sampling system, part of the National Radiation Alert Network operates with 24-hour samples and one 72-hour sample collected on a weekly basis. The samples are checked for gross beta radioactivity. The water-monitoring program consists of measuring the concentration of gross alpha and beta radioactivity in samples from 25 locations. These samples are taken at the water supply of individual locations. Samples are also sent in on a bi-monthly basis by 14 interstate water suppliers. Measurements are made on levels of radium, strontium 90, gross alpha and beta radioactivity in the samples by the Idaho Falls Laboratory of NCR-ERDA.

In contrast, significant problems remain with the X-ray program. Approximately 27 percent of the state's 6,000 X-ray machines are inspected infrequently, if at all. When the machines are inspected, they are usually only inspected once every two years. This falls very short of the twice per year inspection frequency recommended by X-ray manufacturers. Moreover, the machines which are inspected most frequently, i.e., those in hospitals, are the machines which are least likely to be in need of inspection since hospitals can often afford maintenance contracts with the manufacturer, while other users cannot.

Other radiological activities are minimal. The Division of Health is equipped to evaluate the need for decontamination in case of radiation accidents, but is not equipped to monitor radiation emissions, to treat victims, or to undertake decontamination procedures. This limits the Division of Health to a radiation accident plan which consists mostly of a list of the agencies to contact.

Most of these inadequacies can be attributed to insufficient funds. It is estimated that a budget of approximately \$1,390,000 is needed in order for Missouri to have an adequate radiological protection program. The budget for the past three years has fallen far short of this. In FY '75, it was about \$51,000; in FY '76, \$57,000; and in FY '77, it was \$61,000. This level of expenditure is below the national average and places Missouri in the bottom five states on total and per capita expenditures for radiological protection activities.

Conclusions

Many unanswered questions as to the long-term effects of human exposure to radiation and the possibilities of massive releases of radioactivity into the air, water, or soil by Nuclear Power Plants and/or related sources has prompted much recent concern.

The problems in Missouri mirror those found nationwide. As "hard" information becomes available, a greater risk analysis will be developed. However, until such time the following goals are being advocated as minimum guides for health policy establishment vis a vis radiation safety.

Goals, Objectives, and Actions

GOAL: ALL MEDICAL USES OF RADIATION SHOULD BE LIMITED TO THE MINIMUM EXPOSURE LEVELS CONSISTENT WITH REQUIREMENTS OF THE PARTICULAR PROCEDURE AS ESTABLISHED BY THE AMERICAN COLLEGE OF RADIOLOGY.

GOAL: RADIOACTIVE WASTES AND SPEND FUEL FROM NUCLEAR POWER PLANTS SHOULD BE DISPOSED OF IN SUCH A WAY THAT ALL RISK TO PRESENT AND FUTURE GENERATIONS IS MINIMIZED.

GOAL: RISKS TO CITIZENS FROM INTER- AND INTRA-STATE SHIPMENTS OF RADIOACTIVE MATERIALS SHOULD BE MINIMIZED.

OBJECTIVE 1: By 1981, comprehensive regulation governing shipments of radioactive material should be developed. (The Federal Government, with input from the states, should develop these regulations. However, appropriate state agencies such as the Department of Natural Resources and the Division of Health should be encouraged to express their concern on lack of federal action.)

GOAL: TO MAINTAIN THE LOWEST PRACTICAL LEVELS OF NUCLEAR RADIATION IN MISSOURI.

OBJECTIVE 1: By 1981, the Department of Natural Resources should adopt a statewide policy encouraging reduction of reliance on nuclear power, in favor of conservation and the use of safer energy sources.

GOAL: APPROPRIATE RESEARCH TO DETERMINE THE EFFECTS OF LOW LEVEL RADIATION SHOULD BE ENCOURAGED AND SUPPORTED.

GOAL: REGULATIONS SHOULD BE ENACTED TO INSURE THAT RADIOFREQUENCY FIELDS** IN BOTH THE OUTDOOR AND INDOOR ENVIRONMENT ARE KEPT AT SAFE LEVELS.

**Radiofrequency feilds are generated by microwave ovens, CB radios, T.V.s, and other electronics.

E. SUMMARY OF OVERALL FINDINGS AND PREFERRED POLICY DIRECTION

6. Summary of Overall Findings and Preferred Policy Direction

The thrust of the Environmental Health component of this year's State Health Plan is to delineate the basic parameters on which to build a more comprehensive approach toward health and the environment.

Both the overall findings and the policy direction as advocated are summarized first in general nature immediately below and then by individual sections. Where action steps or goals can be established they are included as part of the individual section conclusions.

1. We are beginning to recognize the hazards of an unhealthy environment.
2. Traditionally, we have been concerned with care after the fact, not with detection of cause or prevention.
3. If we continue to devote our full attention to reacting to medical crises, we shall never reach a point in which these crises can be diminished through planned environmental government management.
4. Our perspective on environmental health suggests that it should be viewed as a complement to personal health. This means that the environment must be evaluated in terms of the physiological and psychological responses of man to the physical, chemical, and biological attributes of the environment.
5. We propose to use an approach that interjects the pattern of modern illness as a population based syndrome which results from options and opportunities available to populations through policies determined by public as well as private organizations.
6. A population and policy oriented planning approach reflects not only philosophical concerns but also an economic imperative in that escalating costs of current traditional strategies are reaching their political and economic limits.
7. This ecological planning approach would aim at making changes in environmental and socioeconomic conditions which would offer more health promoting and fewer health damaging options.
8. The implications are that the SHPDA/SHCC energies would be directed toward policy decisions and directions within state government. A shift in only one or two policy areas could have far reaching effects on health status.

9. Constraints imposed by resources, time, and the lack of a clear mandate mitigate against SHPDA/SHCC "taking on" the total environmental sphere. Consequently our concern will not be with environmental quality as such but rather with how the environment affects the health of the people of Missouri.

Overall Goals

GOAL: BY 1980, THE MISSOURI SHPDA SHOULD ESTABLISH THROUGH COOPERATION WITH APPROPRIATE STATE AGENCIES, AN INTERAGENCY COUNCIL ON ENVIRONMENTAL HEALTH CHARGED WITH COORDINATING AND MANAGING STATE AGENCY ACTIVITIES RELATED TO ENVIRONMENTAL HEALTH.

GOAL: BY 1979, THE PLAN DEVELOPMENT COMMITTEE OF THE STATEWIDE HEALTH COORDINATING COUNCIL SHOULD ESTABLISH AN ENVIRONMENTAL HEALTH TASK FORCE CHARGED WITH ADDRESSING BOTH ENVIRONMENTAL AND PREVENTIVE AREAS OF CONCERN.

ENDNOTES

Environmental Health

NOTE: Through this section the authors have made liberal use of the reference material cited at the end of this section.

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INDIVIDUAL PREVENTION, DETECTION AND REFERRAL

"Services provided to individuals which promote optimal physical and mental well-being, through prevention, early detection and protection from disease or disability; early identification or detection of disease, ill-health, or disability at the presymptomatic or unrecognized symptomatic state to permit early intervention; and assistance in entering the service delivery system at the appropriate intake point."

A. PREVENTIVE HEALTH SERVICES

A. IMMUNIZATION

Introduction

The purpose of an immunization program is to prevent the occurrence and transmission of communicable diseases. Unprotected individuals may suffer serious consequences including deafness, blindness, mental retardation, and even death. "The primary function of the Bureau of Immunizable Diseases is to provide a comprehensive delivery system for immunization against disease as a service to all communities of the state. This includes all residents of Missouri with the major emphasis on the 375,000 pre-schoolers and 1,105,343 school age children."¹

Desired System

Availability

The integrated and comprehensive immunization delivery system must be capable of making immunizations available to every non-immunized child in Missouri.

Accessibility

Cost should not be a barrier to the accessibility of immunization.

Acceptability*

Quality

A comprehensive immunization program should ensure for immunization against polio, rubeola (measles), rubella, DPT, and mumps. Within a comprehensive immunization system, emphasis should be placed on providing immunization services, conducting effective assessment of immunization levels among important subpopulations, implementing sensitive surveillance systems to detect disease outbreaks, and developing an effective response mechanism for outbreaks of disease or for recently identified inadequately immunized subpopulations.

A comprehensive immunization program should also include an information/education component. Parents should be motivated to obtain immunizations for their children and awareness of the importance of

* = will not be addressed at this time.

appropriate and timely immunizations on the part of physicians and other health professionals should be reinforced. Parents should be provided with appropriate information on the risks and benefits of immunization.

Cost*

Continuity

Since some immunizations are given in a series, it is very important that there be follow-ups to ensure that all patients receive the full series.

Comparative Analysis

The current state immunization law (RSMo 167.181) requires that all children in grades kindergarten through twelve be totally immunized for DPT, polio, rubeola (measles), and rubella or have filed a statement of exemption (which is permitted for medical, religious, and/or philosophical objections).** Immunization against mumps is not required.

Availability

When it is determined through school audits that immunization levels are low, the Division of Health staff offers free immunization clinics for the required immunizations. "Logistically, one-half (1,409) of the schools in the state can realistically be serviced each year."²

Accessibility

Except for mumps vaccine, immunizations are accessible to school age children in the State of Missouri.

Cost*

Quality

Table III-PHS-1 presents data on the recent immunization rates within Missouri. As can be seen, immunization rates have been increasing for all five categories.

**These exemptions account for less than one percent of the student body.

TABLE III-PHS-1: SELECTED DISEASE IMMUNIZATION RATES IN MISSOURI
IN GRADES K-12 FOR SCHOOL YEARS 1973-74 THROUGH 1977-78³

SCHOOL YEAR	DPT	POLIO	RUBEOLA	RUBELLA	MUMPS
1974-75	77.0%	71.0%	69.0%	65.0%	31.0%
1975-76	83.0	81.0	78.0	75.0	34.0
1976-77	83.6	82.3	80.5	78.1	38.5
1977-78	88.5	87.7	91.7	89.6	38.3**
	5.6*	5.9*			
77-78 Total	94.1	93.6	91.7	89.6	38.3

* In progress - these children were adequately immunized at time of reporting. A second dose is required to complete immunization.

**Mumps to not have to be reported. Therefore, this number is low. The Division of Health estimates mumps immunization is probably in excess of 50 percent.

The statewide immunization enforcement campaign undertaken by the Missouri Division of Health was instrumental in attaining the high degree of compliance in 1977-78. In that school year, all parents of school age children were required to present a record of immunization for each child or the child would be removed from school.

Each year in Missouri, many children contract mumps and are absent from school. In some schools, absenteeism is so great that school has to be canceled during the epidemic. While in most cases mumps is not a serious illness, it can result in severe after effects such as sterilization of both males and females. Through proper precautions and immunization, this illness could be prevented.

As can be seen in Table III-PHS-1, the immunization rate for mumps is low. This number is somewhat misleading since schools are not required to collect data and many do not have appropriate records. Therefore, the numerator contains only those students in school completing the form, while the denominator contains all students enrolled in school. Maximum estimates suggest that slightly more than fifty percent are immunized.⁴ According to the Missouri Division of Health, there has been a steady increase in the number of kindergarten students immunized for mumps. The level of immunization decreases with the increasing grade level of the student.

Immunization activities for preschool children are concentrated in captive audiences such as licensed day care centers and Head Start Programs. For preschool children, the Division of Health program concentrates its efforts in these actions: 1) educational efforts directed at the licensed day care center children (37,844) and all Head Start Program children (10,073); 2) mailings to the State's 67,412 new births encouraging immunization; and 3) education of public and private health providers as to the importance of appropriate and timely immunizations.⁵ The immunization status of the preschool population is as yet unmeasured.

Continuity*

Acceptability*

Problem Description

If the Division of Health is to maintain the high degree of success experienced in 1977-78, then they must receive adequate funding (Federal and State) to establish a permanent mechanism. This mechanism must ensure that comprehensive immunization services will be easily available to nearly 100 percent of the children.

The Division of Health, Bureau of Immunization, had intended to push for mumps immunization in 1978-79 for all school age children. However, the Federal emphasis has shifted from making funds available for all ages to supporting the full immunization of preschool and children entering school for the first time. Cost is a barrier to further implementation. The current cost to the Division of Health of combined measles, mumps, and rubella vaccine is \$2.62 per dose and mumps vaccine alone is \$1.60 per dose. The cost to private physicians is much higher. Without a law requiring mumps immunization and/or adequate funding, it will be difficult for the Bureau of Immunization to raise the level of children immunized against mumps to the same level as other immunizations.

Goals, Objectives, and Actions

GOAL: TO ENABLE MISSOURI'S POPULATION TO HAVE ZERO INCIDENCE OF IMMUNIZABLE DISEASES.

OBJECTIVE 1: By 1983, immunization rates for polio, DPT, rubeola, and rubella for school age children (K-12) should be at least ninety-five percent.

Recommended Action 1: Adequate funding should be available to the Division of Health to enable them to achieve and maintain a high level of immunization.

Recommended Action 2: The Division of Health and local school districts should continue to be supported by the Office of the Attorney General in enforcing Missouri's immunization statute.

OBJECTIVE 2: By 1983, the immunization rate for mumps for Missouri's school age children (K-12) should be at least ninety percent.

Recommended Action 1: Missouri's legislation on immunization (RSMo 167.181) should be revised by 1980 to also require immunization against mumps.

Recommended Action 2: Adequate funding should be provided to the Missouri Division of Health for an intensive statewide mumps inoculation program.

Recommended Action 3: By 1983, all schools in Missouri should be collecting immunization records of their students against mumps.

B. WELL PERSON MAINTENANCE

Introduction

"... Marvelous though health care services are in Canada in comparison with many other countries, there is little doubt that future improvements in the level of health of Canadians lie mainly in improving the environment, moderating self-imposed risks, and adding to our knowledge of human biology."⁶

Our present health care system is really an illness system. "Gomez decries this situation by terming as 'ludicrous' our propensity as a society to spend so much on transplants - 'temporary patch-ups on already worn frames' - and 'so little on teaching people to live so that their own hearts, arteries, and other organs can serve them through a reasonable span.'"⁷ We educate for illness and reimburse for illness but do little of either for wellness. Don Ardell, in his book High-Level Wellness⁸ describes a continuum of wellness to illness with most of us being at around the midpoint. We can choose to move in either direction - toward illness or toward wellness - by our choice of life style.

Providers of health care are in a unique position to educate people toward wellness. They inter with people at a point when they are conscious of their wellness-illness state. They have knowledge that is useful in making lifestyle choices (nutrition, exercise). Yet physicians, hospitals, and other providers of health care have traditionally given little time or attention to health education.

Desired System

Availability

Health promotion services, including health education, should be available for every person in primary and acute care settings.

Accessibility

Accessibility is related to the distribution of health providers and the costs of preventive care. (See Financial Incentives for a discussion of reimbursement).

Cost

The cost of promotion and prevention services must be weighed against the long-range benefits. Currently money going to preventive health measures is 2 to 2.5 percent of the total budget for health in the United States.⁹

Acceptability

Health education programs should be designed to fit the educational level and cultural background of the targeted person or group.

Continuity

Health education should be provided at all stages of wellness through illness. In the primary care setting, preventive life style education can assist in averting the onset of disease and patient education is an essential part of the treatment process. In the hospital setting, as in primary care, patient education is an important part of treatment.

Quality

Health promotion programs should exist at all levels within the health care system. Emphasis in programs should be placed on self-responsibility, encouraging a life style which fosters wellness, and treating the whole person or "holistic health." "Holistic" means "viewing a person and his/her wellness from every possible perspective . . . treating the person, not the disease."¹⁰

Primary prevention (before the onset of disease) and early diagnosis (presymptomatic) should be provided in outpatient settings. This should include age-specific screening, life style assessments, and family history combined with education for the prevention of future health problems. Secondary prevention in outpatient and acute care settings should be an integral part of the treatment. Hospitals should include trained health educators as a part of their patient education programs to be carried out by the actual providers of health care.

Comparative Analysis

Availability

Primary prevention programs exist in very few physician's offices. Patient education (secondary prevention) is somewhat more prevalent in physician's offices and especially in hospitals, although the amount is difficult to assess in the absence of formal programs.

Accessibility* (See Financial Incentives)

Cost*

Acceptability

In many patient education programs, the educational level and background of the patient are not taken into account. There is no assessment of whether the patient understands the relevance or importance to his/her health of what he/she is being told. "The reliability of self-medication is relevant to the understanding of the pathological process . . . Patients who did not understand their illness told their interviewer that their physicians either did not tell them about their disease, or if they did, that their explanation was too technical . . . There are obvious communication difficulties."¹¹ In the above study, 20 of 27 patients (75 percent) with an eighth-grade education or more took digitalis as often as prescribed, compared to 13 of 33 (39 percent) who were less educated.

Continuity

Most health education is directed toward patients after the onset of illness. Education to prevent illness is not common.

Quality

Health promotion activities currently are confined almost entirely to patient education and most of that occurs in hospitals. Medical schools do not place much emphasis on prevention and schools of nursing, while somewhat more oriented toward health education, still place most of their emphasis on clinical skills (illness training).

The large hospitals in the State offer some patient education (most often for diabetes and heart disease), prenatal classes, employee health education, and to a lesser extent community health education (smoking and weight loss clinics). Smaller hospitals often have programs to educate diabetes and heart patients. The existence of a department of health education (mainly in large hospitals) usually facilitates a good health education program. Most health education in primary care settings and hospitals, is done informally by physicians and nurses and, therefore, is difficult to assess.

The University of Missouri has recently opened a Health Maintenance Clinic. "Visitors to the . . . clinic have one characteristic in common: they are not sick."¹² An interdisciplinary team including a doctor, nurse practitioner, social worker, nutritionist, health educator, and exercise physiologist assess, advise, and educate a patient about his/her health status. If a problem is discovered in the two session assessment, then the person is referred for treatment. Teaching the well patient to avoid health problems is a major emphasis of the program. At present, the clinic (or programs like it) are extremely rare in Missouri.

Problem Description

1. Training programs for health care providers (medical schools, nursing schools) are illness rather than prevention oriented.
2. Relatively few hospitals have departments of health education. In the absence of some kind of formal designation, health education services are difficult to assess.
3. Even fewer hospitals hire health educators to plan programs and train the people who actually interact with patients. Providers know about content of health education, but health educators have the skills to know how to present it.
4. Health educators are being trained in Missouri but not being hired in Missouri. Most of them take positions out-of-state.
5. Reimbursement for health promotion is almost non-existent.

Goals, Objectives, and Actions

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE DISEASE THROUGH THE PROVISION OF HEALTH PROMOTION PROGRAMS IN PRIMARY AND ACUTE CARE FACILITIES.

OBJECTIVE 1: By 1983, every hospital in Missouri should have developed a patient education program.

Recommended Action 1: Secondary care hospitals should formally designate a section within the hospital to carry out health education activities.

Recommended Action 2: Tertiary care hospitals should have professionals designated for health education within the hospital.

Recommended Action 3: The Missouri Hospital Association should offer training, assistance in designing programs, and materials for member hospitals.

Recommended Action 4: Patient education programs should be reimbursable by third-party payers.

OBJECTIVE 2: By 1983, all hospitals should offer community health education programs.

Recommended Action 1: The SHPDA should work with the Missouri Hospital Association to more clearly define what health education programs currently exist and what potential exists for their expansion, improvement, and reimbursement by third-party payers.

Recommended Action 2: Hospitals should assess the most common preventable health problems in their service area and offer programs designed to prevent them.

OBJECTIVE 3: By 1984, primary care settings should be providing a range of health promotion programs including well person maintenance, screenings, early diagnosis, and health education.

Recommended Action 1: Health Maintenance Organizations should include a fully developed health promotion program and should include a health educator on their staff.

Recommended Action 2: Primary care physicians should develop a means of offering health promotion programs to their patients, either through direct provision of services or by referral to a health maintenance clinic.

Recommended Action 3: Prevention of illness education should be increased in Missouri's medical schools.

OBJECTIVE 4: By 1984, health maintenance clinics should be accessible to everyone in the state.

Recommended Action 1: The medical schools should develop model projects throughout the state.

Recommended Action 2: Hospitals should be considered as potential locations for such clinics.

OBJECTIVE 5: Adult health education programs should be expanded to include non-medical settings (see Lifestyle Development, sub-sections A. 1. Comprehensive School Health Education - Objective 6; 2. Health Education in Business and Industry; 5. Health Education Services by Voluntary Health Associations; and B. 2. Media).

Recommended Action 1: Additional settings for adult health education programs should be explored.

ENDNOTES

¹Missouri Division of Health, Division of Health Program Statements, July, 1978.

²Ibid.

³Unpublished data, Missouri Division of Health, Bureau of Immunizable Diseases.

⁴Ibid.

⁵Division of Health Program Statements, op.cit.

⁶Lalonde, Marc, "A New Perspective on the Health of Canadians: A Working Document," Ottawa: Government of Canada, April, 1974, p. 18.

⁷Ardell, Donald B., "From Omnibus Tinkering to High Level Wellness: the Movement Toward Holistic Health Planning," American Journal of Health Planning, Vol. 1, No. 2, October, 1976, p. 19.

⁸Ardell, Donald B., High Lend Wellness, Rodale Press, 1977.

⁹Preventive Medicine: USA, A Task Force Report sponsored by the John E. Fogarty International Center for Advanced Study in the Health Sciences, National Institute of Health and the American College of Preventive Medicine, New York, 1976, p. 6.

¹⁰Ardell, op.cit., p. 5.

¹¹Preventive Medicine USA, op.cit., p. 25.

¹²Karen Wallensak, "Clinic Aids the Healthy," Article in the Columbia Missourian newspaper.



DIAGNOSIS AND TREATMENT

"Services for identifying and alleviating disease, ill health, or disability."

DIAGNOSIS AND TREATMENT

The Diagnosis and Treatment Services section addresses two major sections and three secondary service categories as defined in the taxonomy. These service categories are analyzed in varying degrees of specificity and where further analysis is demanded, reference will be made to areas of future consideration.

Discussion within the components focuses on services and issues which occur more appropriately in an outpatient or freestanding clinic setting. For information regarding inpatient services which would relate to these components refer to the Medical Facilities Appendix.

Previous editions of the Missouri State Health Plan have contained components on Surgical Services, Diagnostic Radiology, Therapeutic Radiology and General Medical Services within this section. These components now appear in the Medical Facilities Appendix. The service examined in depth at this point is that of acute care within the discussion on General Medical Services. The Medical Facilities Appendix is an evolving document, as is the State Health Plan. Other services will be examined in depth as time and resources permit.



A. EMERGENCY SERVICES

Introduction

The primary purpose of an emergency medical services (EMS) system is to provide appropriate care in "responding to the perceived individual need for immediate medical care in order to prevent loss of life or aggravation of physiological or psychological illness or injury"¹

Time is an important factor in the survival rate, especially from motor vehicle accidents. In rural areas, the time distance factor increases mortality rate. "Even though the motor vehicle accident rate is similar for urban and rural areas (about twenty accidents per 1,000 population), the chance of dying as a result of a motor vehicle accident is greater in rural areas such as Area V. Some 70 percent of all motor vehicle accident fatalities in the United States occur in rural areas with the remaining 30 percent occurring in urban areas."²

In recent years, significant changes in Missouri's emergency medical services system have occurred, especially in ambulance services. Funeral home operated ambulance services have been decreasing while public operations through counties, cities, ambulance districts, and hospitals have been increasing.

Desired System

Availability

Ambulance services should be available within 25 miles of everyone in the State. First responders with training as Emergency Medical Technicians (EMT) should be available to stabilize a patient's condition until an ambulance arrives. At least two EMTs should be available through every fire department (especially volunteer fire departments) in Missouri.

Accessibility

Accessibility to the Emergency Medical System is important. One mechanism for improving citizen access is through the installation of a universal, emergency 3-digit telephone number capability (911). Another method of extreme importance to the success of access to the system is public information and education. Educational materials (e.g., films, slides, spot commercials, brochures) should provide information on how to access the system and how an EMS system improves medical services. The elimination of delay in accessing the EMS system may mean the difference between life and death.

* = will not be addressed at this time.

Quality

The EMS system should have the capability of providing a range of essential care from the site of the illness or accident, during transit to the hospital emergency department, to the patient's discharge from the emergency department. The EMS system should include an adequate number of appropriately trained personnel who can reach the scene quickly, capably stabilize the victim at the scene, communicate directly with a hospital, and transport the victim to the appropriate hospital capable of meeting the patient's needs.

The quality of care received by a person in need of Emergency Medical Services depends on a continuum of services which are provided by a range of health care providers and the public. The Bureau of Emergency Medical Services (BEMS), Division of Health describes an Emergency Medical Services System as follows:³

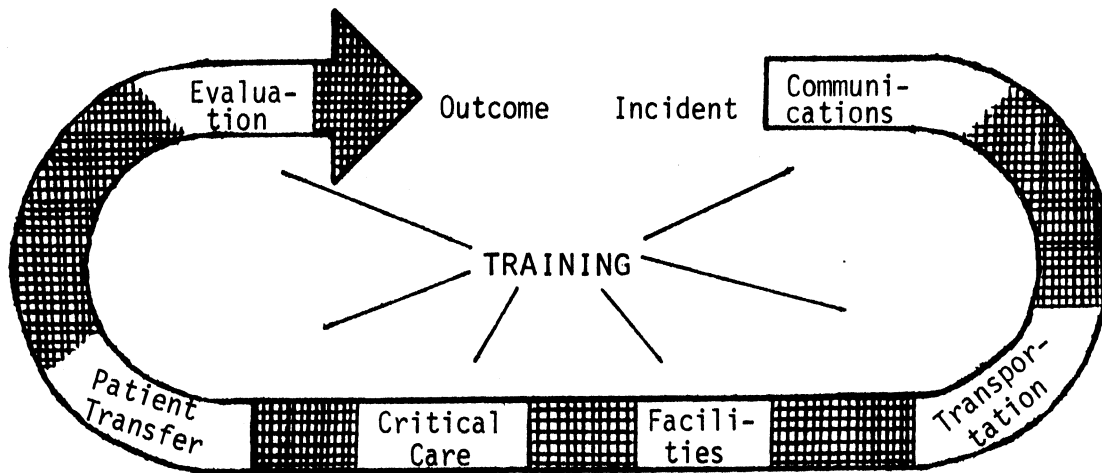
The Emergency Medical Services Act of 1973 (P.L. 93-154 amended P.L. 94-573 in 1976) established the following 15 components to be addressed by a federally funded EMS system:

1. Manpower
2. Training
3. Communications
4. Transportation
5. Facilities
6. Critical Care Units
7. Public Safety Agencies
8. Consumer Participation
9. Accessiblility to Care
10. Transfer of Patients
11. Standard Medical Record-Keeping
12. Public Information and Education
13. Evaluation
14. Disaster Linkage
15. Mutual Aid Agreements

Of these 15 components, seven are of crucial importance to the success of a systems approach to providing emergency medical services. These seven components are crucial because they directly impact patient care.

An EMS system can be summarized in terms of how a patient flows through the system according to the following seven-component diagram.⁴

FIGURE III-E-1
 PATIENT CARE FLOW⁵
 SEVEN COMPONENTS



First, someone from the general public will come upon the accident scene. This individual will go to the nearest telephone and will know what number to call because 911 or single access will be in effect and an effective public information program will have informed him what number to call. If he goes to a public telephone, a sticker will tell him what number to call.

Secondly, the call will go to the central dispatching system, which will instantaneously relay the message to the ambulance service closest to the accident scene. The dispatcher will have sufficient EMS training to be able to appropriately medically prioritize the call.

Third, the ambulance will be in excellent condition and will be well equipped (meeting American College of Surgeons requirements) because the vehicle will have been inspected by the Bureau of Emergency Medical Services. If it is a state placed vehicle, all appropriate specifications will be met.

Fourth, the personnel responding to the scene will be adequately trained. Quite likely, they will have received training only under courses meeting Bureau of EMS and DOT requirements. They will have been tested and certified by state developed examinations and will receive refresher training and undergo State testing every three years.

Fifth, the ambulance personnel will utilize the mobile radio equipment to contact the nearest hospital. This hospital will be equipped with the Hospital Emergency Administrative Radio (HEAR) system or its equivalent and will be able to phone patch to inwards WATS lines the ambulance personnel's call to a medical control center where 24 hour physician coverage will exist. Ambulance personnel will be able to be in direct voice contact with a physician at any time of the day or night.

Sixth, once the patient has been initially stabilized, he will be taken to the closest appropriate hospital. The capabilities of the hospital's E/R will be known in advance because it has been categorized according to AMA criteria.

Seventh, at the emergency room the patient will be seen by a physician whose emergency medicine skills have been refreshed by attendance at emergency medical physician seminars. If there is no emergency physician at this particular emergency room, a nurse trained in emergency critical care will be on duty.

Eighth, once the patient is further stabilized, he would either, according to transfer agreements and protocols developed at the regional level, a) stay at that hospital, or b) be moved to a more appropriate hospital, or c) be moved to a critical care center (trauma, cardiac, burn, spinal cord, neonatal, psychiatric, or poison). The location of these critical care facilities will be known in advance because transfer agreements and triage protocols will be in effect. The transfer agreement, triage protocols, and treatment protocols will insure acceptance of patient care responsibilities by the receiving institution and protect the transferring facility and physician from "abandonment liabilities."

Ninth, as the patient recovers he may be transferred to appropriate long-term care institution or appropriate outpatient facility for convalescence.

Tenth, evaluation of the patient's outcome will be possible because tracer studies will be possible for all seven critical care categories because the Bureau of EMS will have developed a special E/R report form and a new ambulance trip ticket. Also, the Bureau's acquisition of a recorder compatible with the logging recorder in each region will enable medical evaluation of the medical control center, the ambulance run, the performance of ambulance personnel, and the response of the system to the incident.

The ingredients that will make the above scenario work will be: 1) the State Communications Plan, which establishes medical control; 2) training funds for EMS training and coordination; 3) identification of critical care units and development of protocols and transfer agreements; 4) public information and education programs on how to access the EMS system; and 5) acceptance by hospital E/Rs of the critical care patient report form and ambulance trip ticket for evaluation of the EMS system.

An important ingredient is the categorization of emergency facilities. Efforts should be made to coordinate activities to ensure that categorization efforts undertaken at the local level do not conflict with the overall State efforts. A suggested method is to categorize emergency facilities along three approaches: horizontal, vertical, and circular.

Horizontal categorization establishes hospital emergency rooms as either 1) basic (adequate equipment but no 24-hour physician coverage); 2) general (has 24-hour physician coverage); or 3) comprehensive. Horizontal categorization should be largely the responsibility of the EMS regional councils and their staffs. Vertical categorization establishes critical care unit capabilities by type of service it can render - trauma, burn, spinal cord, high risk infant, acute coronary, poison, and behavior. Circular categorization identifies the interrelationships between emergency rooms and critical care units so as to provide an even continuum of care for the patient at the most appropriate facility.⁶

TABLE III-E-1
SAMPLE MATRIX FOR HORIZONTAL/VERTICAL
CATEGORIZATION WITHIN EMS REGIONS (CIRCULAR)⁷

Horizontal		Critical Care Capability-Vertical						
Gen. Emer. Classification*	Name of Hospital	Trauma **	Spinal Cord	Burn ***	**** Acute Coronary	High Risk Infant	Poison Info. Service	Behavioral
I								
II								
III								
IV								

*American Medical Association

**American College of Surgeons

***American Burn Association

****American Heart Association

The Bureau of Emergency Medical Services (BEMS) recommends the use of the American Medical Association criteria for Emergency Rooms in categorizing Emergency Rooms as Level I, II, III, or IV. Critical Care Unit capabilities (vertical) should meet recommended criteria by type of services (see Table III-E-1). Poison centers should have the capacity to recommend treatment as well as give information. This would require that trained nurses take calls and a toxicologist be available 24 hours a day.

Continuity

"Transfer agreements and protocols should be developed to handle the interrelationships of the three types of emergency facilities. Medical care consultants at the state level should develop a overall strategy for vertical categorization and should develop guidelines for written transfer agreements and protocols. The medical care consultant for each EMS region should be responsible for implementing vertical categorization, transfer agreements, and protocols for the EMS region. Thus, medical care consultants should be used at both state and regional levels."⁸

All hospitals should be equipped with the HEAR system** for its equivalent and all ambulances should have compatible mobile radio equipment. Thus, any ambulance will be able to communicate with any hospital within radio range. Furthermore, two inward WATS lines should be installed at selected medical control centers where there would be 24-hour physician coverage in the emergency department. Thus, a rural hospital near the emergency/accident scene would be able to phone patch emergency medical technician ambulance personnel into the medical control center so that the technician can be in direct voice contact with a physician at any time day or night.⁹

Cost*

Acceptability*

**HEAR refers to the Motorola system where the capability exists for the ambulance personnel to speak directly to a hospital through a common statewide frequency.

Comparative AnalysisQuality

The Bureau of Emergency Medical Services (BEMS), Division of Health is the lead agency in the planning and evaluation of Emergency Medical Services in Missouri. Its major functions are: planning for state-wide services, regulation of some services (ambulances), provision of certain kinds of equipment, and developing educational programs for emergency medical personnel.

In 1974, the State of Missouri was divided by DHEW into seven Emergency Medical Services Regions. The seven regions are at various stages in their development. The purpose of these Regional Councils is to develop, implement, and continue EMS systems. Their primary role is to evaluate the system as it currently exists in their region.

Consultants to each Regional Council include a medical director and seven critical care consultants. The BEMS also provides assistance to the regions. These Regions are formed locally and are federally funded. However, the Federal funding intended for limited planning periods is decreasing. A new source of funding will be needed to continue these Councils.

The point of entry to the system, communication of the need for Emergency Medical Services, will be discussed under accessibility.

All ambulance vehicles in the State are inspected annually and must carry the equipment recommended by the American College of Surgeons. State placed vehicles are inspected every 90 days.

"Training attendants in the ambulance service industry is continuously needed because of higher turnover rates and skill deterioration within services which experience a relatively low volume of calls."10 Of the over 6,200 attendants and attendant/drivers licensed in Missouri over 75 percent have taken the 81 hour Emergency Medical Technician course. The rest have taken the advanced first aid course which is the minimal requirement for licensing. BEMS recommends that the licensing regulations should be upgraded to require the 81 hour EMT course. Currently there are 70-80 EMT courses, 10-15 EMT refresher courses and 10 MENT (Mobile Emergency Medical Technician) courses available throughout Missouri. All courses must be State approved if they are to lead to licensure. The Bureau of EMS can provide training to areas of the State where training is unavailable locally. At the present time, 900 ambulance personnel have been licensed as Mobile Emergency Medical Technicians.

Air Ambulances are not currently licensed or regulated in Missouri. The potential for use of this service in thinly populated areas is great. The costs of operating a service are extremely high (an estimated \$3,000,000 to get 5 helicopters operating in 3 locations). A multi-agency system is being explored by BEMS.

Emergency facilities are not regulated by the Bureau of Emergency Medical Services. The seven EMS regions are currently categorizing their area Emergency facilities by the four levels shown on Table III-E-1.

Critical care units for treatment of six of the seven medical conditions shown on Table III-E-1, trauma, spinal cord, burn, acute coronary, high risk infant, poison, and excluding behavior are identified on maps 1 through 5 (see Appendix, Section 3.5, Emergency Medical Services subsection). There are no burn centers officially designated by BEMS although there are hospitals in the State that treat burn patients. Behavior centers are not currently designated.

There are 14 poison information centers in the State. Currently, none of them meet the criteria under desired system. A lesser number of poison control centers meeting the standards of the Federal EMS act could provide a planned treatment course (over the telephone) rather than just information.

Availability

There are 681 licensed ambulance vehicles in the State. The State has played an active role in the development of transportation of emergency patients by placing 407 ambulances in Missouri. Although the Bureau does not operate medical care facilities, all hospitals licensed by the State (approximately 160) have emergency rooms which are currently being categorized by the seven EMS regions. The location of the critical care units has been described.

Accessibility

All ambulance services which have been supplied ambulances by the State are required by contract to respond to request for service, regardless of age, sex, race, or ability to pay. Furthermore, it is the individual on the scene and not the ambulance dispatcher who determines whether or not an emergency exists. However, licensure laws do not provide grounds for the revocation of licensure for failure to provide service by private, non-state provided ambulances.

Communication systems are important in accessing the Emergency Medical services system. The 911 access system (emergency number) exists in limited areas of the State (Columbia, Mexico, St. Joseph, Blue Springs, Lake ozark, St. Charles, Joplin, Poplar Bluff, and Cape Girardeau). Springfield and St. Louis City and County are in the process

of implementing this system. In addition, there is little coordination among ambulance dispatching facilities in the State. A central dispatch system would bring greater coordination among services.

Continuity

Because there is no Missouri State law requiring communications between ambulances and hospitals, development of a communications system has been haphazard.

With increasing legislation regulating ambulance personnel and vehicles, many private ambulance services were and, though somewhat fewer now, are unable to financially provide the service. There are still areas in Missouri where private operators provide the only available ambulance service. In general, private operators have less communications resources than their political subdivision or hospital counterparts. Private operators, in the past, cannot be expected to purchase communications equipment that will meet state guidelines. They should be encouraged to purchase that equipment which they can afford.

Most mobile communications equipment in use has the most universal state EMS frequency of 155.340 MHz and a 1500 Hz digital dial encoder. Beyond that, the capabilities and capacities of individual systems vary greatly. Probably the next most often frequency used is 155.730 MHz, a police frequency that most of the 114 county sheriff's and many of the rural municipalities have. This frequency is often used as a dispatching command and control frequency for the ambulance services. There are no central EMS dispatching entities covering an area larger than two counties which accounts for the use of many channels rather than a single dedicated frequency.

Practically all EMS providers with communications systems have one way radio paging systems to alert personnel. This time saver has presented interference problems in the St. Louis and Kansas City areas. But, even on Special Emergency Radio Service frequencies, interference from paging seldom occurs in the rest of the state. A few hospitals have one way Special Emergency Radio paging frequencies but they haven't gained widespread use because few know they exist.¹¹

Acceptability*

Cost*

Problem Description

1. Legislation requires that all ambulance personnel be licensed by the Bureau of Emergency Medical Services and that the licensure be renewed every three years. In order to obtain relicensure, specific qualification procedures at each level (advanced first aid, emergency medical technician, and mobile emergency medical technician) must be met. Current legislation, however, does not allow for revocation of licensure even for repeated offenders of negligent conduct.
2. Early care at the site of the accident or illness should be provided by first responders fully trained as Emergency Medical Technicians. If at least two are located in each volunteer fire department, they have the capacity to reach the scene more rapidly than an ambulance. The number of people capable of functioning as first responders needs to be increased throughout the State.
3. A problem encountered in moving from the current system toward the desired system is the lack of funds, especially in many rural communities, to purchase equipment to obtain trained personnel. Funding will need to be available to at least maintain the current level of activity; a discontinuance of the supportive activities would mean the emergency medical services system in many areas of the State would deteriorate and revert to previous levels of inadequate care.
4. In order for an Emergency Medical Service System (EMS System) to most effectively reduce mortality and morbidity, it must effectively coordinate its various components. These components address citizens access and education, cardiopulmonary resuscitation training, ambulance vehicle specifications, radio communications between ambulance and hospital personnel, hospital emergency departments and critical care capability, medical evaluation, and training for ambulance and hospital personnel. The State has played an active role in obtaining Federal grant funds in order to improve these various components of the EMS System and provide central coordination so that the most effective response to emergencies can be made.
5. There is a network of poison information centers covering the State. However, these poison information centers in no way qualify to be poison control centers from the Federal perspective.¹² A consolidation of the poison information centers is needed to provide adequate resources in order to have 24 hour coverage by toxicologists, serving larger geographical areas.

6. The communications system of the emergency medical services system throughout the State is inadequate. Citizen access to report an emergency, a central dispatch system for ambulances, and communications between ambulances and hospitals (particularly medical control centers) needs to be improved.
7. Reporting forms have not been standardized. These forms could improve patient care and make possible an evaluation of the system.

Goals, Objectives, and Actions

GOAL: TO PLAN, DEVELOP, AND IMPLEMENT A TOTALLY COORDINATED EMERGENCY MEDICAL SERVICES SYSTEM THAT IS AVAILABLE TO EVERYONE IN MISSOURI.

OBJECTIVE 1: By 1981, a statewide 911 or single access number should be implemented.

Recommended Action 1: The Division of Alcoholism and Drug Abuse should assist the Bureau of Emergency Medical Services in expanding the use of 911 single access number to include emergency detoxification and other alcohol and drug abuse related crises; and in educating the public regarding the use of 911 access number.

OBJECTIVE 2: By 1983, the Bureau of Emergency Medical Services (BEMS) should coordinate and develop a State EMS communications plan which includes ambulance-to-hospital communications, medical control, central dispatch, and interface with Public Safety.

OBJECTIVE 3: By 1980, the BEMS should develop public information and education programs which utilize telephone stickers, informational brochures, public presentations, filmstrips, and the news media.

OBJECTIVE 4: By 1980, the Current Emergency Medical Services legislation should be amended to include patient care standards in order to revoke personnel licenses for repeated offenses of negligence.

OBJECTIVE 5: By 1980, the State legislature should appropriate adequate funding to keep the coordinated systems approach of the seven EMS regions on-going once Federal funding is lost, through a cost-matching procedure with local areas.

OBJECTIVE 6: By 1980, legislation should be passed requiring all ambulance personnel to be minimally trained in the Department of Transportation 81-hour course or its equivalent.

OBJECTIVE 7: By 1981, the Bureau of Emergency Medical Services with the advice and assistance of the Missouri Hospital Association should establish a standardized Emergency Room form used by all emergency facilities throughout the State.

Recommended Action 1: The Bureau of Emergency Medical Services should work with the Division of Alcoholism and Drug Abuse on the incorporation of the Drug Abuse Warning Network reporting items in the standardized Emergency Room form.

ENDNOTES

¹U.S. Department of Health, Education, and Welfare, Emergency Medical Services System: Program Guidelines, DHEW Publication No. (HSA) 75-2013 (February, 1975), p. 2.

²Missouri Area V Health Ststems Agency, Missouri Area V Health Systems Plan, 1978.

³Missouri Division of Health, Bureau of Emergency Medical Services, "An EMS System for Missouri," FY 1980.

⁴Ibid.

⁵Ibid.

⁶Ibid.

⁷Ibid.

⁸Ibid.

⁹Ibid.

¹⁰Ibid.

¹¹Ibid.

¹²Ibid.



B. DIAGNOSIS AND TREATMENT SERVICES

MATERNAL AND CHILD HEALTH

INTRODUCTION

Issue Identification

Significant improvements in maternal and child health status that have occurred since early 1900 are due in part to improvements in and increased numbers of prenatal, obstetrical, and pediatric services. Changes in other factors have also had a positive influence on maternal and child health. Some of these changes were social in nature such as an increase in the educational level of the mother and a reduction in the amount of poverty. Others were environmental, such as improvements in sanitation and housing.

Traditional indicators of maternal and child health include perinatal and infant death rates. A perinatal death is one which occurs between 20 weeks gestation and the 28th day of life.¹ An infant death occurs from birth through one year of age. In 1979, Missouri's perinatal death rate, 18.6 per 1,000 live births, was nearly one-eighth of the 1911 perinatal death rate of 142.5 per 1,000 live births.² Less than 1 out of 40 pregnancies in 1979 resulted in a perinatal death compared to 1 in 7 in 1911. Infant mortality rates in Missouri have followed a similar pattern of reduction. The 1979 rate, 13.7 deaths per 1,000 live births, was approximately one-seventh of what it was in 1911, 99.6.³

Since the advent of the control of infectious diseases and the substantial increases in adequate prenatal care for nearly all demographic subcategories in Missouri, there remain two principal indicators of infant survival and good health. These are low birth weight and congenital disorders, including birth defects.

Low birth weight in infants is the most significant indicator of increased vulnerability to developmental problems and risk of death. Of all Missouri infant deaths in 1972-1976, over 60 percent occurred in infants weighing less than 5.5 pounds (2,500 grams) at birth. However, infants weighing less than 5.5 pounds at birth accounted for only 7.3 percent of the State's total live births for the same time period.⁴ Premature infants, under 5.5 pounds, are more than 20 times as likely to die within the first year.⁵ Low birth weight has also been associated with an increased occurrence of mental retardation, birth defects, developmental problems, blindness, autism, cerebral palsy, epilepsy, and child abuse.

Congenital anomalies are a leading cause of infant and childhood mortality and lifelong disabilities. In 1979, 223 infant deaths, 21.4 percent of all infant deaths in Missouri, were caused by congenital anomalies. For the age group 1 to 4, congenital anomalies accounted for 15.7 percent of all deaths. Congenital anomalies was also listed as the fourth leading cause of death for the age group 5 to 14.

There are many maternal risk factors associated with low birth weight: lack of prenatal care, poor nutrition, smoking, alcohol and drug use, age, social and economic background, as well as marital status. Lack of adequate prenatal care may result in high risk complications of pregnancies and infection of the uterus, resulting in a four to five times greater risk of bearing infants who will not survive their first year of life.⁶

Poor maternal nutrition increases the chances of stillbirths or bearing a low birth weight infant. Nationally it has been determined that smoking during pregnancy may be a contributing factor in 20 to 40 percent of low birth weight infants.⁷ Studies also indicate that regular consumption of alcohol during pregnancy increases the risk of low birth weight, birth defects, and/or mental retardation.

Maternal age is another determinant of infant morbidity and mortality. The perinatal death rate for children born to women under 15 years of age was 76.4 per 1,000 live births, and for children born to women over forty the rate was 56.4. The lowest rates were for children born to women 25 to 29 years old. While infant death rates were highest for teenage mothers under 15 years of age, stillbirth rates were highest for women over 40.

The age of the mother is also a factor in congenital anomalies as well as low birth weight. The risk of malformations increases with advancing maternal age. The incidence of congenital anomalies rises steeply for mothers aged 35 and over and is particularly high for mothers aged 40 and over. The risk to infants borne to this latter group of women was twice the risk to infants borne to women aged 25-29 years. Down's Syndrome is the most striking example of the increased risk to older women of bearing a malformed infant. The incidence of Down's Syndrome for infants borne to mothers aged 40-49 years was 33 times greater than for those infants borne to mothers aged 20-24 years.

Great disparity exists among racial groups concerning the frequency of low birth weight and mortality rates. Non-white infant mortality is nearly twice as high as white infant mortality rates. Prematurity as well as low birth weight is also more prevalent for Missouri's non-white population.

While mortality rates remain as a primary indicator of infant health status, it is important to remember that not all health problems are reflected in these figures. Other significant health problems include birth injuries, accidents, and the Sudden Infant Death Syndrome. It is also important to encourage early detection of developmental disorders since the first year of life is important to the development of sound mental and physical health.

In 1900, the principal causes of death to children ages 1 to 14 were infectious diseases;⁸ whereas in 1979, accidents, which accounted for 47 percent of all deaths, were the leading cause of death

in Missouri for the same age group. While cancer, birth defects, influenza and pneumonia, and homicide are listed in the five leading causes of death, mortality rates for these causes of death are relatively low when compared to the mortality rate due to accidents, the leading cause of death. A reduction of 50 percent in the number of fatal accidents could reduce significantly the current mortality rate of children due to all causes.

In addition to the more obvious health problems, children face other problems related to behavioral development (alcohol and drug abuse), emotional development (child abuse and neglect), and intellectual development (learning disabilities). These problems may stem from social and/or interpersonal causes. If developmental problems are not identified and dealt with early, they will have an affect on both the emotional and the physical health of the child.

Issue Analysis

A study conducted in 1976 revealed that the Federal government has 106 programs relating to maternal and child health, with responsibility distributed through five different cabinet-level executive departments. Within these departments the programs are scattered over fifteen agencies and forty-five offices, bureaus, or institutes. The 106 programs were based on fifty-eight pieces of legislation, which passed through almost thirty congressional committees and subcommittees. This kind of fragmentation virtually guarantees conflicting regulations, gaps in and duplication of services, and bewildered parents and providers.⁹

Recent studies indicate that 7 to 14 percent of the Nation's children have no regular source of health care and that 47 percent of children under the age of 12 have never seen a dentist. Families are often unable to obtain needed care due to a lack of information. To further complicate the matter, health care is often fragmented with a variety of overlapping services at numerous locations. Too often there is no coordination of these services or even coordination of information concerning services that are available.

Currently, some steps are being taken to consider the full range of the child's and family's health care needs. Supportive birth environments that provide opportunities for family members to participate in the birthing process are becoming more common. The American Hospital Association has distributed a resource kit for preparing children for hospitalization and medical procedures. Also, more hospitals are recognizing parents as a resource in health care. Most children are actually cared for in the home; even those children who require hospitalization spend the majority of their convalescence at home. However, most health insurance plans do not cover the expense of home health care, especially for children.

Cost is a major determinant of access to health care. "A dual system of health care exists in the United States, one for the poor and one for those who have more money . . . In general, poor children are sick more often, die sooner, use health care less frequently, have the longest distance to travel to receive medical aid, have the least amount of health insurance, and pay more proportionately than children whose families have larger incomes. For many of these children, their only source of medical care is either an emergency room, a public clinic that is closed in the evenings and weekends without even telephone access, or an ambulatory clinic in a large hospital where they are often seen by a different doctor in training each time they come for a visit. Thus, children with the greatest risk of illness are often seen by the least qualified practitioner in a setting that does not lend itself to continuity of care."¹⁰

FAMILY PLANNING

Issue Identification

Expansion in the range and volume of family planning services, together with the increased effectiveness of those services, has had a broad impact on American lifestyles. The most pronounced among these changes in lifestyle is a decrease in the average size of the American family. Research has documented both health and social benefits of smaller families. These include improved health status and financial self sufficiency to family members.¹¹ The health care system itself has also been changed by the growth of family planning services. As the desire to limit and space family growth has led more individuals to seek family planning services, providers of these services often find themselves called upon for primary health care.

Despite the progress in providing family planning services, many people still do not have access to these services and consequently are at high risk for unwanted pregnancy. This group may include adolescents, low and marginal income families, the unmarried, those in isolated rural areas, and many needing outreach and education services.

The majority of persons who are financially able, obtain family planning services from private physicians. Those who are unable to pay for such services rely upon publicly funded programs. In estimating the number of women at risk of unintended pregnancy and in need of subsidized family planning services, three factors are considered. These factors are age at initiation of sexual activity, fertility, and birth intentions. Each component is differentially proportioned according to age, race, marital status, economic status, and whether the individuals live in an urban or rural area.¹²

In 1979, the estimated number of women in need of subsidized family planning services in Missouri was 244,810, or 22 percent of the total number of women aged 15-44.¹³ Areas showing the highest need for family planning services, based on number of women in poverty status and at high risk of unintended pregnancy, are concentrated around St. Louis, Kansas City, Columbia, St. Joseph, and the Bootheel.

Another indicator of the need for family planning services is the number of pregnancies terminated by abortion. During 1979, the abortion rate per 1,000 live births in Missouri was 273.6, reflecting an increase from 201.6 in 1976. The rate varied widely with the age of the individual. For those under age 19, the rate was 529.3 per 1,000 live births, accounting for nearly one-third of the total number of abortions. Major metropolitan areas including East-West Gateway (St. Louis) and Mid-America (Kansas City) Regional Planning Commission (RPC) areas had the highest abortion rates, with 322.6 and 393.0 per 1,000 live births, respectively. Combined, the minor metropolitan areas, Lakes Country (Springfield), Mid-Missouri (Columbia), and Mo-Kan (St. Joseph) PRC areas, had a rate slightly below the State averaging 236.6

per 1,000 live births. While for non-metropolitan RPC areas, the average abortion rate was significantly lower at 111.3 per 1,000 live births.¹⁴ The fact that this rate for the entire State continues to increase indicates a need for improved family planning services.

Of particular concern is the increasing number of teenage pregnancies. One reason for this concern is the increased risk (due to age) of medical complications that can result in adverse effects to the child. Pregnancies among teenagers are associated with an increase in the incidence of toxemia, labor complications, low birth weight, congenital birth defects, mental and physical handicaps such as epilepsy, cerebral palsy, retardation, blindness and deafness, and infant mortality. Of equal importance are the sociodemographic factors associated with teenage pregnancy including illegitimacy, poverty, lower education levels, and child abuse and neglect.

According to a recent study, Our Youngest Parents, nationally, over a million adolescents become pregnant annually. Among teenage mothers, there are increasing numbers who choose to keep their babies.¹⁵ In 1978, there were 7.0 births to teenagers per 100 live births in Missouri. The areas with the highest rates were the Bootheel RPC, with 13.9; St. Louis City, 12.2; Ozark Foothills RPC, 10.9; Kaysinger Basin RPC, 10.4; South Central Ozark RPC, 8.3; and Jackson County and Southeast Missouri RPC, both 8.2.¹⁶

Issue Analysis

Family planning programs are operated by both public and private agencies throughout the State. Funds for these services are provided under two Titles of the Social Security Act (42 U.S.C. Chapter 7). Title V (Bureau of Maternal and Child Health) programs report directly to the State, while Title X (private provider) programs report to the Federal regional office in Kansas City. A third program, Title XX (Department of Social Services), discontinued funding for family planning services as of July 1, 1980. Family planning clinics must provide services to low and marginal income women as a condition for receiving Federal or State funds.

During fiscal year 1979 (July 1, 1978 - June 30, 1979), Title V and Title XX programs provided services to 15,889 patients, while Title X clinics served 93,010 females.¹⁷ The combined statistics for public-supported family planning programs indicate that 44.5 percent of the women in need of subsidized family planning services (as calculated by the numbers presented above) were provided such services. The remaining 55.5 percent of women in need of subsidized services were without those services.

During the same period, a 41 percent increase in service utilization among adolescents under 18 years of age was reported by the Title V and Title XX clinics. Adolescents aged 13 to 19 accounted for 32,216 (approximately 43 percent) of the clients served at Title X

clinics.¹⁸ Combined, these statistics indicated that only 39.1 percent of the estimated number of adolescents in need of subsidized services were receiving services, leaving 60.9 percent with unmet need. Due to discrepancies between the minimum ages used in State and Federal reports and those used in the estimation formula, the proportion of unmet need to adolescents may be underestimated.

Only six Missouri counties were without any family planning services during fiscal year 1979. However, on July 1, 1980, Title XX funds were withdrawn for family planning services, eliminating those services in 16 additional counties. As a result, both availability and geographic accessibility of services is likely to be a greater problem for persons residing in these counties.

Teenagers may face special problems regarding accessibility if parental consent is a prerequisite to receiving services. Currently, whether or not State-supported family planning clinics provide services to minors without parental consent is a matter of local determination. (A minor is defined as someone under 18 who has not been emancipated.) Even though Federal program guidelines state that services should be available regardless of "race, color, national origin, religion, creed, age, sex, parity, or marital status,"¹⁹ not all clinics that receive Federal funds accept teenagers without parental consent.

Federal program guidelines also stipulate that services should be available in a manner that protects the dignity of the individual. Providers should have regard for the sensibilities, privacy, confidentiality, and self respect of the individual during all interactions. Currently, programs under Title V and X are monitored via required program evaluations. However, patient satisfaction surveys could provide valuable information regarding the acceptability of services, especially in areas where adolescent pregnancy is a problem.

Title V clinics operate according to State standards of care, while Title X standards are administered through the Federal regional office. The State standards are being updated and revised to reflect changes in medical technology. Continuing efforts are being made to institute a statewide training program to promote coordination and consistency in service delivery.

Continuity is the most important issue in terms of integrating family planning services within a comprehensive health care system for women and adolescents. Family planning should be considered essential to interconceptional and preconceptional care. Clinics should be planned as part of any perinatal services program implemented in the State, especially in those areas where public family planning services are not available.

Management information, planning, and evaluation should be coordinated among the entitlement programs. Family planning clinics are key agencies in referring patients for additional care. Each clinic should

be aware of the full range of services in its area and make appropriate referrals. Often the clinic is the first or only point of contact for women in need of a range of medical and social services. Family planning services should include the following:

1. community as well as patient education relating to the range of contraceptive methods, natural and artificial;
2. medical services related to contraceptive prescriptions and supplies;
3. voluntary sterilization;
4. medical services related to contraceptive complications;
5. referral arrangements with other health care services, welfare departments, and voluntary agencies; and
6. social services, i.e., counseling, information on community resources, and follow-up.

In addition, pregnancy testing services should be widely available so that all females have access to means of early determination of pregnancy. Counseling services should provide supportive, non-judgemental information and assist the woman in choosing among alternatives.

In cases of unintended pregnancy, especially among teenagers, balanced information concerning the consequences of various alternatives should be presented. Discussion should include possible medical and obstetric complications of pregnancy, the rate of separation in adolescent marriages, the educational, social, vocational, and financial consequences, and the realities of parenthood including the potential consequences of an unwanted child.²⁰ The alternative of adoption should be explored pointing out both the positive aspects and the complications. Finally, the option of abortion may be considered.

Regardless of the client's decision, especially in the case of adolescents, every effort should be made to offer appropriate supportive services including counseling, emotional support, logistic help in carrying out the decision, identification of needed services, provision of services if available and referral and follow-up as appropriate.²¹

Those who choose the option of abortion should be advised to seek services only through licensed or accredited facilities. These services should be provided to the public with the same standards of safety and effectiveness as any other health service.

The importance of preventing unwanted and/or inappropriately timed adolescent pregnancy cannot be overlooked. All adolescents should be provided access to family life and sex education before reaching the point in their lives when such information is needed in decision-making. While parental provision of such education may be the ideal,

it is apparent that some parents are either unable or unwilling to provide accurate information. Health care providers, schools, churches, and other community organizations must assume the responsibility to provide this service not only to adolescents, but also to parents.

Currently, family life and sex education in the schools is recommended but not required by the Missouri Department of Elementary and Secondary Education. However, the content and provision of this education material must be at the discretion of local school districts.

PRENATAL CARE

Issue Identification

There are several significant time periods used in determining maternal and infant health indicators. The relationships among these are shown in Figure A-MCH-1 in the Data Appendix. Prenatal care starts at the beginning of pregnancy and continues through delivery. Perinatal care begins in the last trimester of the pregnancy and is carried over into the first twenty-eight days (also classified as the neonatal period) of the infant's life. For statistical purposes, a perinatal death is usually one which occurs between 20 weeks gestation and the first 28 days of life; a fetal death, including stillborns, occurs between 20 weeks gestation and birth; and an infant death is one which occurs from birth through the first year of life.

Infant and perinatal mortality rates are primary indicators of the well-being of mothers and children. Each rate suggests different influences which may affect maternal and infant health. The perinatal death rate reflects medical or physical conditions which are less likely to result from environmental influences, e.g., genetic diseases. While the infant death rate manifests environmentally related factors such as nutritional intake, adequacy of maternal care, and child abuse or neglect.

In keeping with the National trend, Missouri's infant mortality rate has dropped from 16.4 per 1,000 live births in 1975 to 14.2 in 1977, and more recently to 13.3 in 1979.²² Although the statewide rate is declining, a more detailed analysis of infant mortality points to certain geographic areas of concern. According to aggregate rates from 1967-1978 in a plan published by the Missouri Division of Health, several areas in the northwest corner of the State have not experienced significant reductions in infant mortality in recent years.²³ The same study indicates that the highest regional rates for infant mortality in 1978 occurred in St. Louis City and Jackson County. Perinatal death rates for 1978 again pinpointed St. Louis City and Jackson County as the areas of the State with the highest rates. In the ranking of Regional Planning Commission areas, the Bootheel, Southeast Missouri, and Northwest Missouri areas have high perinatal death rates in relation to the rest of the State.²⁴

Secondary factors such as premature births, inadequate prenatal care, non-white births, teenager mothers, educational levels of the mother, and illegitimacy may be used as indicators of high risk for infant and perinatal deaths. When these factors were combined for the year 1978, according to the Division of Health, they indicated that the Bootheel Regional Planning area, Ozark Foothills Regional Planning area, and the St. Louis and Kansas City urban areas were at highest risk of infant and perinatal deaths.²⁵

In summary, analysis of both primary and secondary indicators point to three areas of the State that exhibit the poorest status. These include the two largest urban areas (Jackson County and St. Louis City) and the southeast (the Bootheel and Ozark Foothills Regional Planning areas).

Issue Analysis

Maternal and infant care in Missouri is provided through a number of different type of projects addressing the various elements of pregnancy, delivery, postpartum, and neonatal care. A total maternal and infant care system should provide health care at the following intervals: preconceptual (before the first pregnancy), early pregnancy, late pregnancy, intrapartum (during delivery), early postpartum (during hospitalization), late postpartum (until first checkup), first year, and interconceptional (between pregnancies). Preconceptional and interconceptional phases are covered in the family planning section of this component. The remainder of the phases will be discussed in this section.

The Missouri Division of Health provides many programs relating to maternal and infant health which are described below. The publicly-financed programs supplement the many private and volunteer agencies which offer similar services throughout the State.

1. Prenatal clinics: "Prenatal clinics" include a variety of specific services provided through the Bureau of Maternal and Child Health (MCH). These include the following:
 - a. Maternal and Child Health Nurses are assigned to work in county and local health units to provide specialized services to pregnant women, infants, and children. Assigned nurses attempt to place special emphasis on mothers that have a high risk of poor pregnancy outcome because of either medical and/or sociodemographic factors. Examples of the nurses activities include: home visitation before, during, and after delivery; classes for expectant parents; developing liaison with local hospitals and other community agencies for case finding and referral; and participation in family-life education on a request basis. Currently only 28 MCH nurses are assigned to county health units, considered far too low a staffing level to provide the types of services needed.
 - b. The State is moving toward more comprehensive prenatal clinics, such as those established by Marion, Audrain, Platte, and Butler counties, and the Kansas City Health Department. More recently, several other counties have established clinics including Wayne, Ripley, Carter, Buchanan, Pemiscot, Cole, Dunklin, and Reynolds. As an

example, the Audrain County program is part of an integrated city-county health unit for Mexico, Missouri and Audrain County. The MCH nurse assigned to the unit is able to provide comprehensive and integrated service and referral to the patient population.

- c. The special MCH program in Kirksville include prenatal and postpartum care, prenatal education, and outpatient pediatric clinic for children up to 16 years of age, a Women, Infants, and Children (WIC) program, and inpatient pediatric care. High-risk intensive care for infants is also provided.
 - d. Jefferson County and St. Charles operate comprehensive prenatal programs. The Jefferson County prenatal program is a model of a comprehensive prenatal, interpartum, and postpartum care program. In 1979, the Jefferson County program delivered 124 babies and served a total of 233 families. The program is unique in that it was planned by, and now is operationally coordinated among, a number of agencies. The program provides at least one prenatal and one postpartum home visit per client and maintains a strong liaison with the hospital at which its patients deliver. Because of its past success, a proposal has been made to expand this program and add pediatric comprehensive care which would include Child Health Conferences and an adolescent pregnancy program.
2. The Maternal and Infant Care (MIC) Programs are organizationally located within the St. Louis City Health Department and the St. Louis County Health Department. Both projects emphasize comprehensive prenatal care. The St. Louis City MIC project patient population is approximately 99 percent black, while 84 percent of the patients are unwed. These two populations account for two of the most significant socioeconomic risk factors among pregnant women. The St. Louis County project operates three clinics in the outlying areas of the county, where accessibility to prenatal services has been a problem.
 3. Intensive Infant Care (IIC) Program is the Neonatal Intensive Care Unit (NICU) at Children's Mercy Hospital, Kansas City. Operational since 1972, the unit consists of 45 isolettes and is designed to provide care for critical, intermediate, and convalescing infants. The NICU admits approximately 700 cases per year from hospitals throughout the five county metropolitan area and from outlying areas of the State. Its referral and transportation network is considered very effective in identifying and treating high-risk neonates through the geographic region it serves.

4. Improved Pregnancy Outcome (IPO) projects are developed for the purpose of improving maternal care and pregnancy outcome in selected States which contribute excessively to the incidence of infant mortality. There are currently three project sites: St. Louis, Kansas City, and the Bootheel (including the Ozark Foothills and South Central Ozark Regional Planning areas). The three direct clinic sites provide comprehensive services to perinatal and high risk patients with special preference to adolescents. The project also funds an outreach and a patient tracking program.
5. The high-risk maternal and infant care program is part of the Prevention of Mental Retardation (PMR) Bureau activities within the Missouri Division of Health. The High-Risk program operates only one direct health care program--the Southeast Missouri Maternity Clinic in Cape Girardeau. Six high-risk conditions are covered by the program: multiple pregnancy, diabetes, antepartum hemorrhage, isoimmunizable conditions, severe hypertension, and premature membrane rupture. (These conditions account for only six percent of total births, but about 30 percent of infant deaths.)
6. Congenital metabolic screening programs: Currently Missouri provides screening for phenylketonuria (PKU) and hypothyroidism. PKU, more commonly known as Folling's disease, is a congenital deficiency which results in brain damage that causes severe mental retardation. Missouri law requires the parents, guardian, or custodian of every infant born in the State, prior to the tenth week of its life, to cause tests to be performed through an attending physician, midwife, public health facility, or hospital for PKU and other metabolic defects. Administrative responsibility for the program rests with the Bureau of Maternal and Child Health which receives reports of presumptive positive tests, notifies the physician and the local health departments of test results, advises family physicians of available resources, and is involved in sponsoring meetings of families with PKU children. Screening and dietary monitoring are carried out by the Section of Laboratory Services.

A hypothyroidism screening program was added to the PKU program in July, 1978. An advisory committee was established to help develop and pilot the program; the committee is now serving in an ongoing capacity to assist MCH in PKU and hypothyroidism screening. MCH records indicate that 99.5 percent of all newborns were screened for these metabolic defects in 1979.

Limited MCH staff and resources have constrained development of prenatal programs to meet growing needs. Continued coordination with local health departments will be necessary to maximize provision of services at the local level. The Bureau also needs to utilize private resources, such as not-for-profit organizations and universities to assist in some of its data collection and coordination activities. Clarification is needed as to the role of nurse practitioner in providing maternal and infant care.

Designated maternity or prenatal clinics are sparsely distributed in the State, and poor roads in rural areas make transportation to any type of MCH program a problem. The geographic distribution of existing and needed services should be considered as additional programs are made available.

Most existing Division of Health programs are financially accessible to low-income women for outpatient services, but inpatient delivery is a severe financial problem. Patients are billed by the hospital if they are not covered by the high-risk maternal and infant care program, Title XX (Medicaid), or another third-party payer. Medicaid does not reimburse for the full cost of prenatal care. In areas where physicians do not accept Medicaid patients, public clinics provide the only accessible services. The lack of insurance coverage for a full range of perinatal services and exclusions from insurance benefits based upon the patient's age and/or marital status result in unreasonable financial barriers to prenatal and perinatal care.

While determination of acceptability of services is on an informal, subjective basis, all programs should place priority on services to the client. "Prenatal care should be safe, satisfying and humane, respecting the dignity and integrity of the individual, variety in cultural forms and the individual's right to self-determination . . . many patients desire personalized, family centered care and some control over their pregnancy experience. Therefore, alternative methods of delivering care are needed to respond to the needs and requests of these child-bearing families."²⁶

To assure quality services, the American College of Obstetrics and Gynecology (ACOG) standards should be implemented in all maternal care programs, with the proper training about these standards provided to administrative and clinical personnel.

Prenatal assessment of medical, nutritional, social, and emotional needs should begin as early in pregnancy as possible and should include development of a patient care plan. In 1979, close to 19 percent of all pregnant women were not receiving adequate prenatal care.²⁷ An effort should be made to educate women about the advantages and availability of these services. Once prenatal care is initiated, the following schedule of routine visits is recommended by the American College of Obstetricians and Gynecologists: every four weeks until the 32nd week, every two weeks until the 36th week, every week until delivery. During these visits, patient education should be provided which covers the basic principles of prenatal care, hygiene, nutrition, complications of pregnancy, labor and delivery, newborn care, postpartum care, and family planning.

The development of a perinatal network targeting high-risk mothers and infants should make appropriate services more readily available to those in need. An advisory committee to the Bureau for Prevention of Mental Retardation is now reviewing documents that relate to the planning of a "regional perinatal system" that would be designed to meet

the varying levels of care that are needed during the perinatal period. These documents outline the needs and guidelines for establishment of a perinatal system, specifying such factors as the characteristics of Level I, II, and III hospitals, nurse/patient ratios, space needs, and bed needs. Guidelines for regionalization of perinatal care are included in the Data Appendix.

A well-planned perinatal system, such as described in the reference documents and currently in the planning phases by the Bureau for Prevention of Mental Retardation, can be a major step forward in reducing infant mortality. A reduction in infant mortality should occur through the referral of high-risk mothers to appropriate facilities for delivery and the transport of high-risk infants to appropriate health care facilities.

A major problem concerning continuity of care during the perinatal period is the lack of liaison between outpatient prenatal care and inpatient delivery. The Jefferson County and St. Louis County MCH Programs are models of liaison systems. More coordination is needed between the Division of Health and local providers, through county medical societies and hospitals, to enable proper referral and follow-up.

A procedural manual should be developed that establishes protocols for the management of patients. Such a manual should include guidelines for risk classification and for consultation and referral of high risk patients or pregnancy complications to other levels of care.

As the time of birth approaches, expectant parents should be encouraged to actively participate in the childbirth experience. Patient education should prepare them physically, emotionally, and intellectually for the birth experience as well as encourage them to make informed decisions regarding their care and the degree of participation in the childbearing process. Following childbirth, postpartum care should be provided according to established protocols which include patient preparation to care for themselves and their infants after delivery.

FETAL ALCOHOL SYNDROME (FAS)

Issue Identification

Recent reports indicate that use of alcohol by women during pregnancy may result in congenital and behavioral abnormalities in infants born to these women. Studies and observations indicate an increased incidence of stillborns, resorptions, and spontaneous abortions as well.

Characteristics of Fetal Alcohol Syndrome (FAS) include prenatal and postnatal growth deficiency. This deficiency severely affects length of an infant at birth and birth weight and the condition persists through early childhood. Abnormalities occurring up through one year of age or more include: developmental delay or mental deficiency; fine motion dysfunction; brain abnormality; eye and facial abnormalities; cleft palate; congenital limb malformations; cardiac anomalies; abnormalities of the external genitalia; mental retardation; and signs of central nervous system impairment.

Conservative estimates suggest an incidence of Fetal Alcohol Syndrome of greater than 1 in every 5,000 pregnancies and probably closer to 1 in every 2,000 pregnancies. For women who consume more than one ounce of alcohol (2 cans of beer, 5 ounces of wine, or 1/2 ounce of whiskey) daily during pregnancy, the risk of giving birth to an infant with the characteristics of FAS increase to 1 in 50. Of the approximate 73,000 live births occurring in Missouri last year, it is estimated that 5 percent of these were to women who drank heavily. This is defined as consumption of at least 5 or 6 drinks on some occasions with a minimum of 45 drinks per month. This places a minimum of 3,000-3,500 infants each year at high risk (1 in 50) of congenital and behavioral abnormalities. Even when based on the more moderate prevalence rates, FAS is the third leading cause of birth defects with associated spinal bifida (congenital fissure of vertebral column), at 1 per 1,000 live births.²⁸

Issue Analysis

Of the three leading causes of birth defects only Fetal Alcohol Syndrome offers the possibility for prevention. Since this possibility for prevention exists, there is a need for increased general public awareness of the dangers of drinking during pregnancy. This awareness campaign should focus not only on women of childbearing ages, but also on health care providers and the general public.

Currently, the Missouri Division of Alcoholism and Drug Abuse, with the assistance of the Division of Mental Retardation and Developmental Disabilities, has developed and implemented a statewide awareness campaign. In addition, the Division has trained alcohol treatment providers, public health care providers, educators and community leaders to

provide FAS information at the local level. The Division has also disseminated information and coordinated activities at the State level, through its Interagency Substance Abuse Council.

In addition to the work performed by the Division of Alcoholism and Drug Abuse, voluntary health organizations such as the National Foundation/March of Dimes and Drug, Alcohol, Tobacco, Education, Inc. have developed programs and provided training and education materials on Fetal Alcohol Syndrome.

SUDDEN INFANT DEATH SYNDROME (SIDS)

Issue Identification

Sudden Infant Death Syndrome (SIDS) commonly referred to as crib death, is the cause of approximately 6,500 infant deaths annually in the United States. From 1975 through 1978, Sudden Infant Death Syndrome was cited as the cause of death for 329 Missouri infants, who were older than one week but younger than one year. This represents nearly 20 percent of all deaths of infants in that age range.²⁹ The mortality rate for SIDS remained fairly constant during the period, ranging from 1.1 per 1,000 live births in 1975 to 1.3 in 1978.³⁰ However, during the twelve-month period from July 1, 1979 to June 30, 1980, this rate has increased to 1.8.

Presently, there is no consensus as to the cause of Sudden Infant Death Syndrome. The Syndrome cannot be predicted or prevented, and no known treatment or cure exists. The emotional shock of unexpectedly losing an otherwise healthy baby can have a long lasting, damaging effect to the parents. Most parents feel responsible for the death and may be blamed by relatives and friends. Because so little is known about the disease, it is sometimes mistaken for child abuse or neglect. Unwarrented accusations by criminal authorities and relatives can compound the trauma for the innocent family.

The Syndrome has no identifiable symptoms and occurs in all geographical areas and socioeconomic classes. However, some associations have been indicated between SIDS and certain sociodemographic variables. During 1975-78, infants of mothers under the age of 18 had twice the SIDS rate as infants of mothers ages 20-24. The under 18 age group accounted for 18.5 percent of infant deaths due to SIDS.³¹ Infants born to mothers with less than 9 years of education faced a risk three times as great as those infants whose mothers had at least 12 years of education. Marital status was also identified as a factor. Infants of unwed mothers accounted for 37.8 percent of the SIDS deaths during 1975-78 period.³² The rate of risk for this group was three times higher than for infants of married women. Traditionally, unwed mothers have had less than adequate prenatal care.³³ The low maternal age and low economic status of SIDS families have a bearing on these factors of marital and educational status. Of those mothers whose infants died from SIDS during this same time period, only 54 percent had received adequate prenatal care. This figure is low when compared to all Missouri mothers, 79 percent of whom received adequate prenatal care.

Data from the Missouri Center for Health Statistics also indicates that the incidence of SIDS may be related to infant characteristics such as weight at birth and age of the infant at death. Infants whose weight was less than 5.5 pounds at birth were at three times greater risk of SIDS than infants within the normal birth weight range, 3,001-3,500 grams. The data also shows that 52.3 percent of all SIDS deaths occurred in the first two months of life.

Issue Analysis

In July, 1975, a Federal grant was awarded to the St. Louis Regional Maternal and Child Health Council, Inc. to develop a system to provide information about SIDS and support to the families who lost infants to SIDS in the St. Louis area. The St. Louis Sudden Infant Death Syndrome Information and Counseling Project was expanded state-wide with the addition of one staff person in Jefferson City in 1978. The Project's purpose has been to create and facilitate effective services delivery for the families of SIDS victims in the State of Missouri, with the following specific goals:

1. To promote uniform identification and notification of SIDS cases;
2. To provide information and counseling services to SIDS families;
3. To educate health care, social services and public safety professionals concerning the nature of the disease and the needs of SIDS families; and
4. To promote public education concerning SIDS.

In 1978, a State SIDS Program was developed to carry out the tasks outlined in Senate Bill 765. This bill allowed appropriations for autopsy reimbursement and transportation costs on any baby who dies unexpectedly in Missouri and is between the ages of two weeks and one year of age. The State SIDS Program is administered through the Bureau for Prevention of Mental Retardation of the Division of Health.

The Federal Project and State Program have a working and cooperative agreement which helps each other do the necessary tasks that support a SIDS delivery network. The funding for educational and support services comes from the St. Louis based Sudden Infant Death Syndrome Information and Counseling Project. Administration for these activities in both the St. Louis area and statewide also comes from the St. Louis Regional Maternal and Child Health Council, Inc. This agency was the force behind Senate Bill 765 and helped the Division of Health establish its administration of the State Program.

The combination of the Federal Project and State Program for SIDS provides the residents of the State of Missouri with the most comprehensive package of SIDS services in any State. Families and professionals who care for SIDS families have access to thorough education, counseling, training and support services which make a profound difference in the lives of surviving children and parents after the death of their baby. Since July, 1975, referrals of 462 families have been made to the Project. Recipients of the Project's educational programming have included 10,000 professional persons and another 1,500 persons in the community-at-large.

In light of approaching Federal cutbacks, it would be wise to begin planning for alternative ways of providing those services which are currently provided by the Federal SIDS Information and Counseling Project. Without the continuation of the Project's activities in the State of Missouri, families stand a good chance of experiencing the long-lasting and damaging effects which this kind of unexpected death can produce when there is no education or counseling.

NUTRITION

Issue Identification

Nutrition is an important determinant of a woman's reproductive performance. The nutritional status of a woman and her diet during pregnancy have a direct bearing on weight gain. It has been demonstrated that there is a high correlation between weight gain and birth weight. This correlation, coupled with health problems associated with low birth weight, is reason enough to attempt to assure adequate nutrition during pregnancy and postpartum periods.

One of the most common nutritional deficiencies that occurs in infants is iron deficiency anemia. It is usually seen during the age period of 6 to 18 months. The cause of this problem is the high nutritional requirements during the first year of growth and the frequent failure to provide adequate amounts of iron in the infant's diet.

A second problem that is related to the diet of infants is the introduction of cow's milk. Cow's milk, largely because of species-specific protein, induces allergic reactions in some infants. Estimates of the incidence of this allergy vary from 0.1 to over 30 percent. It has been demonstrated that infants born to families that have a history of such disorders are at high risk of such allergic reactions. Frequently, this allergy is followed by other allergic manifestations later on in childhood such as skin inflammation (atopic eczema) and asthma.

While obesity in children, except in extreme degree, has not been proved to be detrimental to their physical health, there is a strong correlation between obesity in childhood and obesity in adulthood. There is also a direct relationship between adult obesity and mortality. Childhood obesity should be considered as an antecedent for associated premature adult mortality. Since obesity tends to cluster in families, the problem tends to be cyclical in nature. With one obese parent, a child has a 40 percent probability of becoming an obese adult; with two obese parents, the probability increases to 70 percent. It has not been determined whether the cause of this familial trend is genetic or environmental.

Heart attack (myocardial infarction) and stroke are consequences of atherosclerosis which begins in infancy or childhood. Increased serum concentration of cholesterol during childhood contributes to a more rapid than usual progression of the atherosclerotic process. The major nutritional concern in the prevention of atherosclerosis during childhood is dietary management of children, ages 1 to 14, who are not known to have an increase in the concentration of certain fatty substances of the blood (familial hyperlipoproteinemia).³⁴ However, there is lack of agreement about the desirability of modifying the diets of normal children. There is agreement that dietary intake of total fat, saturated fatty acids and cholesterol should not be restricted in normal infants, ages 0-1, but should be restricted for children with familial hyperlipoproteinemia.

Dental caries (tooth decay) is a nutritional disorder because it is associated with the frequent consumption of sucrose and other simple sugars and the insufficient consumption of the nutrient fluoride. Dental caries is not only the most prevalent result of nutritional disorder; it is the most prevalent disease for all age groups beyond infancy. A preschool survey of children ages 4 and 5 reported an average of 2.6 decayed, extracted, or filled first (deciduous) teeth in white children and 3.8 such teeth in black children. A second study indicated that the prevalence of dental caries increases with age. Averages for children between five and six were 3.7 and 5.1 respectively. By age³⁵ 10, more than 80 percent of children have caries of permanent teeth.

Issue Analysis

Presently there are two programs through the Division of Health that affect the nutritional status of Missourians. The Bureau of Nutrition under the Section of Disease Prevention was established to serve the entire population of Missouri. The Bureau provides both direct and consultant services. In addition, it provides educational services to health programs and communities throughout the State.

The second program, the Women, Infant and Children program (WIC), is part of the Section of Medical Care in the Division of Health. The main focus of the WIC program is to provide supplemental foods for women, infants, and children such as cheese, milk, formula, high iron cereals, and Vitamin C in the form of fruit juices. Using a voucher system, the program supplies these foods to those who have been certified by contracted local health agencies as being at nutritional risk.

DENTAL CARE

Issue Identification

The health of our teeth and oral tissues significantly affects our appearance, our ability to chew (and, therefore, digestion and nutrition), and our ability to speak clearly. The irreversibility of dental disease is an important concern. "The majority of dental diseases are not self-healing. Left untreated, they progressively become more severe, requiring more extensive treatment at each stage."³⁶ Early detection and treatment is, therefore, highly desirable.

Dental caries is undoubtedly the most common dental problem among children. The incidence of dental caries may be reduced through improved oral hygiene, regular dental checkups, improved dietary habits, dental health education, and use of fluorides.³⁷

Fluoridation of public water supplies is a safe, feasible, effective, and cost-efficient strategy for caries prevention.³⁸ "There is no question that fluorides do, when taken in sufficient quantity by children with developing teeth, increase the resistance of teeth to decay."³⁹

According to a survey by the Center for Disease Control, 59.3 percent of the total U.S. population in 1975 was residing in communities that had water supplies with optimal levels of fluoride.⁴⁰ Currently about 45 percent of Missouri's population live in areas where the water is fluoridated. This high percentage largely results from the fluoridation of St. Louis City and St. Louis County water supplies. Columbia also fluoridates its water supply, but other population centers such as Kansas City, Springfield, St. Joseph, and Joplin do not. Only 21 percent of the population outside of St. Louis City and County live in areas where the water is fluoridated.

The Bureau of Dental Health, Missouri Division of Health, believes that all children in the State should drink water fluoridated to the optimal level. However, the costs of equipment and materials for private water systems and small municipal systems to achieve this goal may be prohibitively high. The Bureau has decided that the minimum size community to target for fluoridation treatment is one which has at least 850 residents.⁴¹

Issue Analysis

Underutilization of dental services, especially among low income groups, has long been recognized as a serious detriment to dental health status. Approximately 98 percent of Missouri's population is affected by dental disease,⁴² yet dental illness is seldom life-threatening. Dental care is considered by most to be an "elective" health service, and is not covered by most health insurance plans. Therefore, financial accessibility is more directly correlated with family income.

Access to dental care is also limited by a shortage of dental manpower in various parts of Missouri (see Data Appendix). Despite community efforts to attract dentists to these shortage areas, it is often not economically feasible for a private practitioner to begin a practice in these areas. This may be explained in part by the high cost of dental equipment, and the consequently high volume necessary to support a modern practice. The National Health Service Corps has subsidized the placement of dentists in parts of Missouri.

Another major, though unqualified, contribution to the problem of underutilization is patient fear. The solution to patient fear of dental care may lie in dental health education.

The Bureau of Dental Health, Missouri Division of Health, promotes programs in oral hygiene instruction, dental health education, and improvement of dietary habits (nutrition education). The Bureau concentrates its efforts on elementary schools in the State.

The Bureau also operates mobile dental units with the assistance of the Missouri Elks clubs. The mobile units deliver services to individuals between the ages of three and twenty-one who are eligible for inclusion in the Missouri Crippled Children's Services Program (CCS).

As described in the Issue Identification section, increasing the number of fluoridated community water supplies in Missouri is a certain and cost-efficient way of improving the dental health status of Missourians. The potential impact of fluoridation of community water supplies is illustrated by the example of Liberty, Missouri's fluoridation efforts. In 1955, Liberty, Missouri began fluoridating its public water supply. In that year, 70 percent of the students examined were found to have visually identifiable dental defects. In 1960, the proportion of students found to have such dental defects had decreased to 52 percent; in 1965, 42.4 percent; 1970, 38.9 percent; and 1977, 25.5 percent (see Figure A-MCH-2). The Bureau of Dental Health provides technical assistance to communities which wish to begin fluoridation of their water supplies.

VISION CARE

Issue Identification

In few areas does preventive health care yield such an immediate and certain return on investment as in the provision of adequate professional vision care for children. Many eye diseases and dysfunctions, e.g., crossed eyes (strabismus), and lazy eye blindness (amblyopia), may be easily and successfully treated if detected at an early age, but may result in varying degrees of vision impairment or blindness if allowed to go untreated.⁴³

Many serious eye problems affecting children do not have easy-to-recognize symptoms that untrained persons would be able to detect. This problem of detection is compounded by the fact that children do not know how well they should see and, therefore, will not recognize their own vision deficiencies.

Issue Analysis

A thorough, professional eye examination⁴⁴ before age six is recommended by the National Society for the Prevention of Blindness,⁴⁵ while the Missouri Division of Health recommends an examination at birth, and again at age three.⁴⁶ Despite the relative affluence of our society, many children reach school age without adequate professional vision care. Preschool and school vision screening programs help to identify unmet vision need.

Vision screening is not a diagnostic procedure. It is a method of identifying children who may have eye problems, according to specific tests.⁴⁷ Vision screening is performed by the school nurse, the community health nurse, and/or properly trained volunteers. Volunteers may be trained by a(n) optometrist, ophthalmologist, nurse, or other qualified health professional to competently administer vision tests.

Organizations interested in sponsoring a preschool vision screening program should begin by contacting the Missouri Division of Health. Procedures for organizing a program are outlined in the Preschool Vision Screening Manual, available through the Bureau.

The National Society for the Prevention of Blindness recommends the following plan for school vision screening programs:

1. Kindergarten or first grade (5-6 years): use of the Snellen E symbol chart.
2. Second grade (7 years), fifth (10-11 years), eighth (13 years), tenth or eleventh grade (15-17 years), and prior to driver education: use of lines of letters except where there is difficulty identifying the letters.

3. All new registrants and teacher referrals should receive vision tests.
4. All children who exhibit change in behavior or learning disability should receive vision tests.
5. All individuals under care should be retested regularly to encourage continuity or appropriate treatment.⁴⁸

The county health unit and the Missouri Division of Health, Bureau of Maternal and Child Health make their resources available to the schools in the State for the purpose of vision screening. The specific tests used in vision screening vary (appropriately) according to local preferences, local manpower capabilities, and availability of resources. All recommended vision screening programs include physical observation and tests for visual acuity, hyperopia (farsightedness), myopia (nearsightedness), and eye muscle imbalance.

Careful observation by the teacher of the visual behavior of the student can provide forewarning of vision problems in children. Such considered observation by the teacher indicates the need for immediate referral for a professional eye examination regardless of the results of vision screening.⁴⁹

ACCIDENTS

Issue Identification

In 1979, the leading cause of death for children ages 1 to 14 was accidents.⁵⁰ Accidental deaths accounted for 46 percent of all causes of death for this age group, more than 4 times as many as died from the next leading cause of death, cancer. Motor vehicle accidents were responsible for more than 20 percent of childhood deaths.

Most accidents among older children involve recreational activities and equipment. Among the leading causes of emergency room visits made by children are bicycles, swings, skateboard accidents, and contact sports. Many accidents can be prevented by assuring that children are given toys which are appropriate for their age. Toxic substances in the home such as prescription drugs and cleaning agents are also a special hazard to younger children. Lead poisoning is an environmental hazard that leads to central nervous system damage or mental retardation as well as death.

Issue Analysis

While accident related deaths and problems fall under health care, they are primarily the results of environmental and social factors. Therefore, they are not amenable to usual medical intervention. In order to reduce the incidence of these problems, prevention activities need to be developed and implemented. Prevention requires change in the behavioral patterns of parents as well children. Frequently, accidents result from the poor judgement of parents and a failure to teach proper precautionary measures to children. While behavioral changes are necessary, educational approaches have been generally ineffective in preventing accidents among children.

Changes in the manmade environment, such as childproof containers and lead-free paints have proved to be more effective in reducing risks. Poison Control Centers are located in a number of localities and provide immediate information on poison antidotes and emergency measures. Public health screening of high risk children for lead poisoning is also important, since lead poisoning is usually asymptomatic.

A significant reduction in the number of accidental deaths could be made if restraints for children in automobiles were used. Beyond reducing risk of injury or death, the use of restraints may encourage children to adopt positive attitudes toward prevention and safety. However, most efforts to convince people to use child restraints have not been successful.

HANDICAPS

Issue Identification

Two basic indicators are used to assess the incidence of handicapping conditions among Missouri children: (1) the number of children born with congenital anomalies and/or birth injuries as reported on birth certificates (1973, 1976-1978); and (2) the number of children with handicapping conditions as recorded by the 1978 mandatory school census. Birth certificate data is limited since not all congenital anomalies or birth injuries are reported on birth certificates. The census of handicapped children (ages 1-20) is a useful assessment tool, but by the nature of its methodology, the total number of children may be underreported. However, by examining both indicators, it is possible to gain some perspective on areas of the State exhibiting significant need for services.

1. Congenital anomalies/birth injuries: Missouri birth certificates record "birth defects" which includes both congenital anomalies and birth injuries. There are limitations in this recording method since not all cases of congenital anomalies or birth injuries are being reported due to late detection of a condition and/or problems in recording. The categories of "birth defects" used by Missouri include such defects as cleft palate, harelip, clubfoot, a defect in the spinal column (spina bifida), birth marks, extra or absent parts, webbed fingers or toes, dislocated hips, a defect in the wall of the urethra (hypospadias), cerebral palsy, and birth injury. Children having one or more of these conditions will need diagnostic and possible treatment or support services.

Information derived from 1978 Missouri birth certificate data indicates that there were 951 cases of congenital anomalies out of 72,654 total births. No birth injuries were recorded for that year. However, there were 181 birth injuries reported in 1976 and 313 reported in 1977. Cerebral palsy as a category has not been used in the recording of data for 1973 and 1976 through 1978. Birth injuries and cerebral palsy may have different causative factors than congenital anomalies and could have been selectively deleted from the records.

It is important to point out those geographic areas with the highest recorded percentage of the State total of congenital anomalies/birth injuries. When percentage of total is used, St. Louis ranks first, Kansas City second, and Cape Girardeau third. According to the Missouri Division of Health, those Missouri Crippled Children Services Districts needing attention for prevention and services for diagnosis and treatment of the handicapped are Hannibal, Poplar Bluff, Kansas City, Cape Girardeau, and St. Louis.

2. 1978 Mandatory School Census. Missouri law mandates that each Board of Education take an annual special census of handicapped children under the age of 21. In this process, a child's age and handicapping condition are recorded. However, a child may not be kept on the

census roles for more than one year without a confirming diagnosis. In order to locate children below the school age, the census takers utilize the media, churches, and community outreach programs. Although intensive effort is made to reach all handicapped children and the census is the primary tool available, it is noted that all handicapped children may not be included in this census.

The categories of handicapping conditions include: deafness, hearing impairment, speech impairment, orthopedic handicap, cerebral palsy, epilepsy, blindness, sight impairment, retardation, emotional disturbance, special learning disability, and special health problems. Both physical and mental conditions are therefore recorded on this census. The National total of handicapped children 3 to 21 years of age served by the "Education for All Handicapped" Act (P.L. 94-142) in 1978-1979 was 3,709,639. Missouri served 96,104 children, or 2.9 percent of the National total.

Of the total number of handicapped children reported by Missouri school census for 1978 (in the physical condition categories ages 1 - 20), the highest proportion of these children, 21.6 percent, reside in St. Louis. Kansas City ranks second with 20.8 percent of the total number of handicapped children. St. Louis and Kansas City are identified as high need areas for services. The lower percentages of handicapped children reported in rural areas such as Hannibal and Poplar Bluff are correlated with less population.

Issue Analysis

1. Crippled Children's Service (CCS) Programs: CCS programs are administratively located within the Bureau of Crippled Children's Services, in the Section of Medical Care, Missouri Division of Health. Crippled children's service encompasses the early location of crippled children and the provision for such children of preventive diagnostic and treatment services, including medical care, hospitalization, and other institutional care and aftercare. The CCS Program also furnishes appliances and facilitative services directed toward the restoration of such children to maximum physical and mental health. The program oversees the development, strengthening and improvement of standards and techniques related to the provision of such restorative care and services, and provides the necessary administrative services in connection with the foregoing.

In fiscal 1979, CCS treated 14,083 Missouri patients; an additional 999 received diagnosis only. This accounts for a total of 15,082 patients in 1979, compared to 13,951 in 1978 and 14,658 in 1977.

In terms of integration and coordination, CCS has established a number of linkages with other agencies serving handicapped children. There are coordinated efforts with the Department of Elementary and Secondary Education under Public Law 94-142, the "Education for All Handicapped" Act. CCS also works with the Mental Retardation and Developmental Disability (MRDD) Division of the Department of Mental Health

on referrals and disability determinations. Interagency coordination also exists between the Division of Family Services and the Division of Health for both Title XIX (Medicaid) and the EPSDT (Early Periodic, Screening, Detection, and Treatment) Program. CCS also has an agreement with the Bollinger County Health Department, which is a model for integrated health services for children with handicapping conditions.

2. Supplemental Security Income/Disabled Children's Unit (SSI-DC): By direction of the Governor, CCS has been designated as the responsible agency for administration of SSI-DC. This program was designed to provide services to blind and disabled children ages 16 and under.

3. Child Development Clinic of Children's Mercy Hospital, Kansas City: The initial objectives of the Child Development Clinic were to develop a model service which could also be utilized by the University of Missouri as a base for its training program in the care of multiply handicapped children and the use of a multidisciplinary staff in providing such care. Data for the years 1978-1979, over a 12 month period showed services were provided to 505 children, who had a total of 1,548 visits. The median age of referral was five years. Slightly more than half the children were retarded. Sixty-eight percent of the children were referred from the specialty clinics at Children's Mercy Hospital. The Child Development Clinic now plays a specialized role in developing linkages to State and local service systems for those children with learning and physical disabilities.

4. Cystic Fibrosis Program: This program which is organizationally located under the Bureau of Chronic Diseases generally concentrates on home visits and outreach programs. Two clinics, located in Springfield and Sikeston, are experiencing increases in patient load.

5. Hemophilia Program: Located within the Section of Medical Care of the Missouri Division of Health, this program currently focuses on home therapy for hemophiliacs, providing infusion of the clotting factor. The program now has 315 patients, 118 of whom are receiving home therapy. Program plans call for expansion into more comprehensive services. Hemophilia, like Chronic Diseases, has an ongoing referral system with Crippled Children's Service.

SICKLE CELL DISEASES

Issue Identification

Sickle cell disease is a comprehensive term used to include all those hereditary disorders whose features are related to the presence of sickle hemoglobin (hemoglobin S) in the red blood cells.⁵¹

Sickle cell disease is found predominantly among blacks. Cases of sickle cell anemia and sickle cell variants have been reported in caucasians. The reported prevalence of sickle cell trait among blacks varies from 6.5 to 14.6 percent in different regions of the United States. The average figure is stated as 8.5 percent. The literature reports that sickle cell anemia occurs in 0.3-1.3 percent of the black population nationally. However, it should be noted that these figures are largely based on studies of the hospital population and cannot be considered representative of the entire United States population. On the basis of sickle cell trait, it is estimated that sickle cell anemia occurs in 1 out of every 500 black infants born in the United States.⁵¹ Since this disease is generally associated with a shortened life span, its prevalence among infants and children is expected to be higher than that found in the older population.

In addition to sickle cell anemia, other disorders are associated with the sickle cell genes. Of these variants, sickle cell-thalassemia probably accounts for most of the cases identified as sickle cell anemia in whites. Sickle cell-thalassemia and sickle cell-hemoglobin C disease are the most common variants among blacks. From 0.06 to 0.25 percent of the United States black population are reported to have sickle cell-hemoglobin C disease.⁵³ While the course of this disease is less severe than sickle cell anemia, pregnant women with this variant carry a greater risk than those with sickle cell anemia. Bone marrow and pulmonary infarctions occur with unusual frequency and postpartum complications such as hemorrhage are common. In addition, both maternal and fetal mortality rates are increased. Sickle cell-thalassemia appears as well to exert deleterious effects on pregnancy. Both maternal and perinatal mortality are increased. Maternal morbidity includes chronic anemia and urinary tract infections.

Issue Analysis

Since there is no specific treatment for sickle cell disease, the primary focus has been screening and management. Early diagnosis of infants and children is essential so that better health care and counseling of the family can be provided. For persons with sickle cell trait, identification before the reproductive age is important for genetic counseling. While screening is useful for informing individuals of the possibility of bearing children with sickle cell disease, ethical and social issues regarding screening for sickle cell disease as well as other genetic diseases have arisen. These issues include problems of stigmatization, confidentiality, and individual freedom of choice in childbearing.

In dealing with sickle cell disease, which produces emotional and financial stress, management and care must extend beyond medical treatment. It is necessary to provide optimal nutrition and dental care as well. In order to avoid risks such as exposure to infection and other crisis precipitating factors, individuals and families need to be oriented toward preventive care. During periods between crisis, periodic physical and hematological (blood) appraisals should be made. Individuals and families may also need assistance with educational, and vocational planning as well as emotional, financial and other problems.

The Bureau of Chronic Diseases within the Division of Health has a sickle cell program which concentrates on education, screening, counseling, and treatment. Two screening programs in Kansas City and St. Louis are being coordinated with the Division of Family Services and the Bureau of Maternal and Child Health.

CHILD ABUSE AND NEGLECT

Issue Identification

The inherent difficulties in identifying and reporting incidents of abuse and neglect have led to varying estimates of prevalence. Neglect is probably more common than direct physical abuse. Estimates of the actual number of cases of abuse and neglect, which are generally underreported, range nationally from 200,000 to four million annually.⁵⁴ Within this range it is estimated that 2,000 to 5,000 children die every year as a result of abuse.⁵⁵ In addition, 10,000 children are severely battered and 50,000 to 200,000 children are sexually abused each year.⁵⁶ Current estimates hold that for every reported case of child abuse, at least four go unreported. In 1979, 48,412 abused and neglected children were identified through reports in Missouri. This represents an increase of 14 percent over 1978. Since the enactment of the 1975 Child Protection and Reformation Act, the number of reports has increased annually. Given that reporting in Missouri probably follows the National trend of underreporting by 4 to 1, the estimated number of children affected by abuse and neglect in Missouri could be as high as 250,000 annually.

These forms of violence, neglect, and sexual abuse affect a broad spectrum of families and are not confined to any socioeconomic group. High-risk families range from the obviously highly troubled to families temporarily under stress. Also at high risk are children of teenage mothers and those in families with closely spaced children.

Factors associated with child abuse and neglect are severe family instability, stress, parental immaturity, strong beliefs about the value of physical punishment, and misconceptions about child development. The use of alcohol is implicated in many cases. In a recent report from the National Institute of Alcohol Abuse and Alcoholism, the misuse and abuse of alcohol was considered to be a problem in 80 percent of the families reported for abuse and/or neglect of children. Developmental disabilities in children may also increase the risk for abuse from parents.

Issue Analysis

In response to increased public awareness of the problem of child abuse and neglect, The Missouri General Assembly enacted in 1969 and amended in 1975 a mandatory reporting law which seeks to identify children who have been abused and neglected, to initiate appropriate treatment and to provide protection from further abuse.⁵⁷ The law requires reporting by certain professional groups and encourages reporting by others. The charge of implementation rests in the Division of Family Services which must investigate reported cases, maintain a central registry of cases, and provide appropriate services to children and their families.

One of the problems in the law that has an impact on the substantiation of reports is the legal definition of neglect. The law defines neglect as failure to provide the proper or necessary support, education or medical, surgical, or any care necessary for the child's well-being.⁵⁸ This definition generally connotes omission on part of the parents. However, measuring the lack of parental concern is subjective, especially in the context of community standards. Standards used for determination of abuse and neglect vary not only across communities, but across agencies within the communities. The decision to intervene by service workers is based largely on what will hold up in court. The problem is even more exaggerated for programs that attempt to deal with "high risk" cases. High risk families are usually defined as those families in which the dynamics of abuse are present, but in which the child has not yet been abused. If the family refuses services nothing can be done until the child is injured. Thus legal definitions tend to make preventive work difficult.

While Missouri law mandates reporting by certain groups of professionals the number of reports from these professionals is lower than non-mandated reports. The mandated reporting clause raises questions concerning the interrelationship among the duty of the reporter, the rights of parents and the welfare of the child.⁵⁷ Some physicians feel that the role of reporter conflicts with the role of healer. Unwillingness to report suspected incidents of abuse or neglect may result from poor diagnostic guidelines and the desire to protect the patient from embarrassment. In smaller communities where the relationship between physician and client may be social as well as professional, reporting becomes even more difficult.

Providers of mental health services tend not to report abuse cases because they feel that reporting is counter to the therapeutic relationship. The prevalent feeling among mental health workers is that as long as the parent is in treatment, the child will not be seriously injured. However, case reports indicate otherwise.

Beyond day care, therapeutic approaches to care of children are almost nonexistent. Few programs have therapists who have specialized in children's services. There is also relatively little work with adolescents who are currently abused/neglected or who had been abused/neglected as children. Foster home placement is seen by some as therapeutic while others view it as a protective service only. Foster care placement is usually made in the middle of a crisis without adequate time to assess the needs of the child or thoroughly identify the reason for placement. Inadequate preparation and support can lead to multiple foster home placements for children who already have experienced considerable trauma. Some feel that foster care as well as treatment services are primarily geared to the needs of the parent rather than the child.

As stated earlier, protective services are mandated by law. However, it is one thing to mandate and quite another to appropriate

adequate funds which would enable full implementation. It is nearly impossible to fully discharge these responsibilities in many of the county offices. No caseworker can provide intensive services to a large caseload, which often leads to feelings of frustration, futility, and ultimately unresponsiveness. In addition to large caseloads, lack of training and skills impedes the effectiveness of services. In too many cases staff receives no training beyond an initial orientation and an annual meeting.

RECOMMENDATIONS

1. Family planning services should be available to all who need and seek them.
2. All health agencies and professionals concerned with the care of women should provide general education and information about family planning services and make appropriate referrals as needed.
3. A comprehensive family planning network should be established throughout the State which will coordinate the efforts of providers of family planning services among themselves and with other health care and social service agencies.
4. Family life and sex education should be provided to all children of pre-adolescent age.
5. Counseling should be an integral part of all family planning services, providing for protection against coercion, exploitation, and for safe, humane and dignified treatment.
6. A network of support services for pregnant teenagers should be coordinated to provide appropriate medical and social services and resources.
7. Public education and media campaigns focused on both the benefits of care during the first trimester of pregnancy and the availability of prenatal and maternal and child health services should be directed toward women of all ages including teenagers.
8. Expand the number of programs that provide prenatal services for women of lower socioeconomic status, such as the High-Risk Maternal and Infant Care, the Improved Pregnancy Outcome, and the Women, Infants, and Children programs.
9. Encourage third party payers, including Medicaid, to extend health insurance plans to cover all prenatal services regardless of age or marital status of the patient.
10. Efforts should be continued to develop a regionalized perinatal system as outlined by the National Committee on Perinatal Health. These efforts should be coordinated through the Bureau of Prevention of Mental Retardation.
11. Implement American College of Obstetricians and Gynecologists standards in all prenatal care programs.
12. Expand current educational and counseling programs to all families who have been affected by Sudden Infant Death Syndrome.
13. Expand current education efforts regarding Sudden Infant Death Syndrome to the general public, public health officials, and the police.

14. Support research to determine the cause of Sudden Infant Death Syndrome and to promote the development of prevention strategies for this syndrome.
15. Conduct a statewide needs assessment of the nutritional status of women, infants, and children.
16. Expand services that provide dietary supplement such as WIC and Food Stamps to include dietary counseling.
17. Encourage increased utilization of dental services by increasing the number of available and affordable third party payment plans that include preventive and maintenance services.
18. Provide incentives to establish satellite offices of dental group practices in manpower shortage areas.
19. Encourage communities to maintain the concentration of fluoride in water supplies from .7 to 1.2 parts per million, as recommended by the Missouri Division of Health.
20. Parents should be certain that their children receive adequate vision care following the recommendations of the National Society for Prevention of Blindness and the Missouri Division of Health as outlined in Issue Analysis.
21. Civic organizations are encouraged to sponsor vision screening programs for preschoolers.
22. All schools in Missouri should maintain complete vision screening programs through their county health unit, school nurse, or voluntary programs.
23. Following initial vision screening, appropriate referral to primary care professionals should be made and each case should be followed up by the responsible party to see that needed care and treatment was provided.⁵⁸
24. Comprehensive care should be provided for all handicapped children in Missouri.
25. All screening programs should include "the need for well planned program objectives, involvement of the community, immediately effective by screening provision of equal access, adequate testing procedures for obtaining informed consent, safeguards for protecting subjects, open access of communities and individuals to program policies, provision of counseling services, an understanding of the relation of screening to realizable or potential therapies, and well-formulated procedures for protecting the rights of individuals and family privacy."⁵⁹

26. Clarify legislation so that definitions of child abuse and neglect include a point of demarcation between: 1) discipline and abuse, and 2) minimal acceptable care and neglect.
27. Establish a children's advocate system that include a bill of rights for children.
28. Upgrade current job qualifications of child abuse workers to include a background in child development and family therapy.
29. Increase the number of staff to assure optimal caseloads of no more than 20 families per child abuse caseworker.
30. Establish comprehensive services, i.e., support and therapeutic, for the abused/neglected child and his/her families.
31. Conduct a resource inventory of maternal and child health services available in the private and voluntary sector.

GOALS, OBJECTIVES, AND RECOMMENDED ACTIONS

GOAL: ASSURE THAT ALL MISSOURIANS HAVE ACCESS TO ADEQUATE FAMILY PLANNING AND PRENATAL CARE SERVICES.

Family Planning

OBJECTIVE 1: By 1985, decrease overall percentage of unmet needs for family planning services to 35 percent; for adolescents to 40 percent.

Recommended Action 1: Missouri's five HSAs, the MHCC, the Division of Health, and the Missouri Family Planning Council should work together to expand family services to underserved areas of the State.

OBJECTIVE 2: By 1985, decrease the birth rate to women under 18 by 10 percent through the reduction in the incidence of teenage pregnancy.

Recommended Action 1: Promote the provision of family life and sex education programs in schools.

OBJECTIVE 3: By 1985, decrease the incidence of abortion by 10 percent.

Recommended Action 1: Promote the provision of family life and sex education programs.

Prenatal Care

OBJECTIVE 4: By 1985, reduce the infant death rate from the present rate of 13.7 to 11.5 per 1,000 live births with no population subgroups exceeding 17.0 per 1,000 live births.

Recommended Action 1: Expand screening programs for medical, social, and behavioral high-risk factors associated with pregnancy.

Recommended Action 2: Establish a perinatal system following guidelines developed by the National Committee on Perinatal Health.

Recommended Action 3: Expand the roles of Maternal and Child Health Nurses and Community Health Nurses.

Recommended Action 4: Expand public awareness and education regarding the benefits of prenatal care.

OBJECTIVE 5: Establish a comprehensive family planning and prenatal care network throughout the State.

Recommended Action 1: Establish coordination among Federal entitlements for family planning.

Recommended Action 2: Expand outreach and education activities in all publicly funded family planning and prenatal care programs.

Recommended Action 3: Improve financial accessibility to family planning and prenatal services through expansion of third party payments and improvements in Medicaid reimbursement.

Recommended Action 4: Clarify the role of nurse practitioner in delivery of family planning and prenatal services.

Nutrition

GOAL: TO DECREASE THE INCIDENCE AND PREVALENCE OF NUTRITIONAL AND NUTRITION-RELATED PROBLEMS FOR ALL WOMEN, INFANTS, AND CHILDREN IN MISSOURI.

OBJECTIVE 1: By 1986, increase the utilization of supplemental food programs.

OBJECTIVE 2: By 1983, all supplemental food programs should be required to provide adequate nutrition education.

OBJECTIVE 3: By 1983, develop and implement a Nutrition component in the K-12 School Health Education Program.

OBJECTIVE 4: By 1986, all school districts should obtain the services of a professional nutritionist to assess the nutritional status of school children, provide community education, and assist in meal planning.

OBJECTIVE 5: By 1984, all family planning and primary care programs should provide nutritional screening, assessment, and education.

Fetal Alcohol Syndrome

OBJECTIVE 1: By 1986, provider and consumer knowledge about the fetal alcohol syndrome should be increased through coordinated efforts of the Division of Alcoholism and Drug Abuse (ADA), the Division of Mental Retardation/Developmental Disabilities (MR/DD), and the Bureau of Community Health Education.

Recommended Action 1: By 1983, the Division of ADA and the Division of MR/DD should establish a common education strategy for dealing with Fetal Alcohol Syndrome.

Recommended Action 2: Through cooperative efforts, the Division of ADA and the Division of MR/DD should develop and/or disseminate two sets of educational materials concerning Fetal Alcohol Syndrome: one aimed at educators (physicians, nurses, teachers, etc.), and the other to be directly disseminated to consumers.

Recommended Action 3: The Division of Alcoholism and Drug Abuse should urge all State agencies, particularly the Division of Health through its district offices, and others working in the areas of maternal and child health to alert clients of the dangers of alcohol consumption during pregnancy.

Recommended Action 4: Our knowledge of Fetal Alcohol Syndrome and the effects of alcohol on pregnant women should be increased as a basis for further evaluation.

OBJECTIVE 2: By 1986, the accessibility, quality, and number of treatment facilities and educational programs for women with substance abuse problems should be increased through the direct intervention of the Department of Mental Health including cooperation with the Division of Health, Bureau of Community Health Education.

Recommended Action 1: The Division of ADA should continue to provide leadership in documenting the extent of both intentional and unintentional overmedication of women in Missouri.

Recommended Action 2: Present substance abuse treatment programs should be reevaluated by the Division of ADA to determine their efficacy relative to women.

Recommended Action 3: The Division of ADA should expand their educational programs directed at women with substance misuse problems. This program should be aimed at the mass media, primarily television and radio.

Sudden Infant Death Syndrome

GOAL: INCREASE EFFORTS TO ASSIST PARENTS, EDUCATE COMMUNITIES, AND PROMOTE RESEARCH ABOUT SIDS.

OBJECTIVE 1: By 1986, increase the availability of autopsies for all sudden, unexpected deaths of children up to one year of age.

OBJECTIVE 2: By 1986, provide direct counseling to all families affected by a Sudden Infant Death Syndrome loss.

OBJECTIVE 3: By 1984, provide education programs about SIDS for all health care providers, public safety officials, and social service workers.

Dental

GOAL: TO REDUCE THE INCIDENCE OF DENTAL DISEASES IN ALL CHILDREN IN MISSOURI.

OBJECTIVE 1: By 1984, develop and implement a dental health component in the K-12 Comprehensive School Health Education Program.

OBJECTIVE 2: By 1986, all school districts that have children residing in non-fluoridated water districts should provide a fluoride mouth-rinse program.

OBJECTIVE 3: By 1986, all water districts that service populations 850 or over should provide fluoridated water.

OBJECTIVE 4: By 1986, services necessary to prevent disease and restore and maintain oral health in children should be available and accessible to all children.

OBJECTIVE 5: By 1986, basic dental services should be available and accessible for all physically handicapped, mentally retarded, and developmentally disabled children ages 3 to 21.

Handicapped Children

GOAL: TO RESTORE TO MAXIMUM PHYSICAL AND MENTAL DEVELOPMENT, THOSE INDIVIDUALS UNDER THE AGE OF 21 WHO HAVE AN ORGANIC DISEASE, DEFECT, OR CONDITION WHICH HINDERS NORMAL GROWTH AND DEVELOPMENT.

OBJECTIVE 1: By 1986, increase the availability of referral, diagnosis, and treatment services.

OBJECTIVE 2: By 1985, increase by 50 percent the number of handicapped children served by Crippled Children Services.

Recommended Action 1: Improve financial eligibility criteria for CCS services.

Recommended Action 2: Expand screening programs for handicapping conditions through public schools, EPSDT, and Child Health Conferences.

Recommended Action 3: Increase CCS personnel in underserved districts, especially those showing high levels of need.

Recommended Action 4: Expand interaction with public schools under P.L. 94-142 requirements.

Recommended Action 5: Increase awareness of CCS services within primary health care programs in the public and private sectors.

OBJECTIVE 3: By 1982, assure that all children receiving CCS services are referred to other necessary health and social services.

Recommended Action 1: Expand service integration by interagency agreements with Division of Health and other State agencies.

Recommended Action 2: Initiate and participate in in-service training programs designed to increase staff awareness of service availability.

Recommended Action 3: Expand use of Individual Service Plans beyond Supplemental Security Income-Disabled Children's Unit.

OBJECTIVE 4: By 1985, assure that policies and procedures are in place for quality control, utilization review, and cost analysis.

OBJECTIVE 5: By 1985, assure that 100 percent of eligible children are receiving SSI-DCU services.

Child Abuse and Neglect

GOAL: REDUCE THE INCIDENCE OF ACCIDENTAL, NEGLECTFUL, OR ABUSIVE HARM TO INFANTS AND CHILDREN.

OBJECTIVE 1: By 1985, coordinate with the Division of Family Services, Division of Health, and Department of Mental Health a program for identification and referral of mothers at high risk for child abuse and neglect.

ENDNOTES

¹Missouri Center for Health Statistics, Perinatal Mortality and Prematurity in Missouri (Jefferson City: Missouri Division of Health, 1979), p. 67. Hereafter cited as Perinatal Mortality.

²Perinatal Mortality, p. 3.

³Missouri Center for Health Statistics, Missouri Vital Statistics 1979 (Jefferson City: Missouri Division of Health, 1979), p. 60.

⁴Perinatal Mortality, p. 37.

⁵DHEW (PHS); Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention (Washington: GPO, 1979), p. 24. Hereafter cited as Healthy People.

⁶Healthy People, p. 24.

⁷Healthy People, p. 24.

⁸Healthy People, p. 33.

⁹United States National Commission on the International Year of the Child, Report to the President (Washington: GPO, 1979), p. 96. Hereafter cited as Year of the Child.

¹⁰Year of the Child, pp. 97, 98.

¹¹Florence E. F. Barnes, ed., Ambulatory Maternal Health Care and Family Planning Services (Washington: APHA, 1978), p. 73.

¹²Missouri Division of Health, Missouri State Plan for Maternal/Child Health & Crippled Children's Services 1981-1985 (Jefferson City: The Division, 1980), p. IV-3. Hereafter cited as MCH/CCS Plan.

¹³MCH/CCS Plan, p. IV-3.

¹⁴Missouri Center for Health Statistics, Missouri Vital Statistics 1979 (Jefferson City: Missouri Division of Health, 1979), p. 50.

¹⁵Rosalind Zither and Shelby Hayden Miller, Our Youngest Parents (New York: Child Welfare League of America, 1980), p. 1.

¹⁶MCH/CCS Plan, p. IV-27.

¹⁷MCH/CCS Plan, p. V-15.

¹⁸MCH/CCS Plan, p. V-15.

¹⁹DHEW Program Guidelines for Project Grants for Family Planning Services (Washington: GPO, 1979), p. 3.

²⁰Barnes, p. 66.

²¹Barnes, p. 66.

²²Unpublished data from the Missouri Center for Health Statistics.

²³MCH/CCS Plan, p. IV-14. (Perinatal mortality rates for several of the RPCs were calculated based on less than 20 events.)

²⁴MCH/CCS Plan, p. IV-14.

²⁵MCH/CCS Plan, p. IV-31.

²⁶Barnes, p. 4.

²⁷Missouri Center for Health Statistics, Missouri Vital Statistics 1979 (Jefferson City: Missouri Division of Health, 1979), p. 50.

²⁸Missouri Division of Alcoholism and Drug Abuse, Technical Support Section and Statewide Services Section, 1978.

²⁹Missouri Center for Health Statistics, Provisional Statistics, (Jefferson City: Missouri Division of Health, 1980). Hereafter cited as Provisional Statistics.

³⁰Provisional Statistics.

³¹Provisional Statistics.

³²Provisional Statistics.

³³Missouri Center for Health Statistics, Missouri Monthly Vital Statistics (Jefferson City: Missouri Division of Health, 1980).

³⁴Samual J. Fomon, Nutritional Disorders of Children (Washington: GPO (DHEW, PHS), 1976), p. 79. Hereafter cited as Nutritional Disorders.

³⁵Nutritional Disorders, p. 82.

³⁶Mid-America Health Systems Agency, Health Systems Plan, 1980-1984 (Kansas City: The Agency, 1980), p. 3.14.1. Hereafter cited as MAHSA HSP.

³⁷MAHSA HSP, pp. 3.14.2, 3.14.3.

³⁸National Center for Health Services Research, Health-United States-1978 (Washington: GPO, DHEW Publication No. (PHS) 78-1232), p. 30. Also see J. David Erickson, "Water Fluoridation and Congenital Malformations: No Associations," Journal of the American Dental Association, 93, November, 1976; J. David Erickson, "Mortality in Selected Cities with Fluoridated and Non-Fluoridated Water Supplies," New England Journal of Medicine, 298, May, 1978; and Eugene Roget et al., "Trends in Urban Mortality in Relation to Fluoridation Status," American Journal of Epidemiology, 107 (1978), pp. 104-112.

³⁹Michael Lane, "Fluoridated Water in Missouri" (Jefferson City: Missouri Center for Health Statistics, 1980), p. 1. At the time of this publication, a referendum to fluoridate Kansas City municipal water supplies had passed, but an injunction had been filed halting the fluoridation.

⁴⁰Center for Disease Control, "Community Water Fluoridation, United States," Morbidity and Mortality Weekly, 26(27): 217, 1977.

⁴¹Lane, p. 4.

⁴²Missouri Division of Health, Program Statements (Jefferson City: The Division, 1980), p. 49.

⁴³Joint Study Committee, American School Health Association and the National Society for the Prevention of Blindness, Teaching About Vision, 2nd ed. (New York: The Society, 1972), pp. 12, 13.

⁴⁴i.e., an examination by an optometrist or ophthalmologist.

⁴⁵Joint Study Committee, p. 20.

⁴⁶David Langerman, Preschool Vision Screening Manual (Jefferson City: Missouri Division of Health, 1968), p. 2.

⁴⁷American Optometric Association, Guidelines on Vision Screening (St. Louis: The Association, 1979), p. 7.

⁴⁸Joint Study Committee, p. 20.

⁴⁹Joint Study Committee, pp. 18, 19.

⁵⁰Missouri Center for Health Statistics, Missouri Vital Statistics 1979 (Jefferson City: Missouri Division of Health, 1979).

⁵¹Jane S. Lin-Fu, M.D., Sickle Cell Anemia: A Medical Review (Rockville, Maryland: DHEW, reprinted 1979), p. 2. Hereafter cited as Sickle Cell Anemia.

⁵²Sickle Cell Anemia, p. 2.

⁵³Sickle Cell Anemia, p. 19.

⁵⁴Healthy People, p. 38.

⁵⁵Year of the Child, p. 92.

⁵⁶Year of the Child, p. 92.

⁵⁷Missouri Annotated Statutes, Child Abuse and Neglect Law, Chapter 210, 1975 Supplement, RSMo Child Protection and Reformation, Section 210.105, 210.107, 210.108 -- repealed L. 1975 H.B. 578 Section A. Effective June 6, 1975. Hereafter cited as Child Abuse and Neglect Law.

⁵⁸Child Abuse and Neglect Law.

⁵⁹Constance Osgood, Descriptive Analysis) of Child Abuse and Neglect Services, State of Missouri (Kansas City: Institute for Community Studies, 1978).

⁶⁰State law prohibits discrimination in recommending or requiring professional services. "No official, employee, board, commission or agency of the State of Missouri, county, municipality, school district, or any other political subdivision of the State shall discriminate between persons licensed under this chapter [optometrists] and chapter 334, RSMo [physicians and surgeons], when requiring or recommending services which legally may be performed by persons licensed under this chapter and by persons licensed under chapter 334." (Missouri Revised Statutes, 1978, section 336.210.)

⁶¹Sickle Cell Anemia, p. 13.

Outpatient/Primary Care Services

Introduction

This year's edition of the Missouri State Health Plan will address only primary care issues as they relate to the delivery of services in the outpatient setting.

Primary Care

Introduction

Alternative solutions to the problems associated with ill health in today's society are described elsewhere in this plan as primarily involving the responsibility of the individual. From another perspective, society's responsibility, through both public legislation and private initiatives, is also a significant part of the solution. This concept suggests that it is the obligation of the individual to care for himself, and when necessary, to appropriately utilize health care services. It is the responsibility of society, both government and private citizens, to provide information and accessible health care services which are reasonably affordable. It is to this second obligation that this section relates.

The focus on primary care as a part of the solution to this obligation is essential, because primary care services include routine treatments for a majority of today's health problems. The concern about primary care is shared by many at the National, State, and local levels. Indeed, in 1975, the U.S. Congress identified the provision of primary care services for the medically underserved population especially those located in rural and 'economically depressed areas,' as a number one priority. The Missouri General Assembly recently debated several proposals dealing with manpower and other key considerations for the delivery of primary care services. All health systems agencies in Missouri through their public forums and health systems plans have mentioned problems with the current primary care delivery system.

The first step is to understand what range of services and manpower primary care encompasses. "The term 'primary care' is normally used to describe the range of services traditionally [emphasis added] rendered by physicians in the community practice."¹ Definitions range from this rather simplistic one, where almost all physicians become 'primary' at one time or another, to long discussions of specific disease categories. Perhaps the definition that is most direct is that of the American Academy of Family Physicians:

Primary care is a type of medical care delivery which emphasizes first contact care and assumes ongoing responsibilities for the patient in both health maintenance and therapy of illness. It is personal care involving a unique interaction between the patient and the physician. It's comprehensive in scope and includes the overall coordination of the care of

the patient's health problems, be they biological, behavioral, or social. The appropriate use of consultants and community resources is an important part of effective primary care.

Today, primary care remains the point of entry and first contact with the health care system, once the consumer has decided medical care is required. The provider of first contact, whether a physician or other skilled practitioner, will care for the consumer over time, and when necessary, act as his advocate in referral to other service settings, either physical or mental.

In general, primary care represents 80-90 percent of the health care services utilized. This includes diagnosis and treatment of uncomplicated illness and disease, home care, ambulatory services, surgery, minor emergencies, and dental services.² In addition, primary care includes 'wellness-oriented' activities such as promotion of the individual's responsibility in terms of health maintenance, education, and prevention activities.

Desired System

Availability/Accessibility

The central questions become whether care is available to those who need it and what barriers must be overcome to obtain care. In the jargon of today's health care, this crucial issue is labeled 'access' to care. Access issues translate into a number of questions which together determine whether or not persons obtain the care they need. Is the practitioner available? How far is it to his office? How long does it take to get an appointment? How long will the practitioner be seen and how much will it cost? How will the bill be paid? Was the patient satisfied with the visit?

Understanding the extent and scope of the problems is a basic key to developing solutions. Rural residents face some problems (e.g., geography, transportation, and manpower) which are different from urban residents, yet other issues (education, access, and lack of funds) face both areas equally.

A discussion of desired 'access' to primary care in Missouri inevitably leads to a discussion of health manpower availability of Missouri's numerous medically underserved areas. Chapter III, Systems Development, of the State Health Plan offers a more detailed analysis of manpower issues whereas this section will only address primary care practitioners. The literature offers guidance on 'appropriate' practitioner-to-consumer ratios. The following guidelines have been selected as the desired ratios in primary care practitioner manpower.

Physician total:population

- general practitioner = 25/100,000 population
- internist = 12.5/100,000 population
- obstetrician/gynecologist = 8/100,000 population
- pediatrician = 10/100,000 population
- total = 55.5/100,000 population³

It would also be desirable that the legislative programs necessary to define and enable the appropriate uses of various levels and skills of physician assistants and nurse practitioners are developed and enacted. In so doing, the expanded use of these personnel in the 'team approach' can be legitimized.

Another key issue associated with 'access' is the ease with which the practitioner and the client are brought together. In order to facilitate better 'access' the desired system of primary care services would have the following characteristics.

- services provided 24 hours per day either on site or by contract;
- general appointments scheduled within two weeks;
- location within reach of public transportation, [elderly residents should be able to gain access through Older American Transportation Services (OATS)];
- geographic proximity such that no Missouri resident is so distant from primary care that travel time is a barrier to accessibility.

Continuity

A second major issue is continuity of care and coordination of physical and mental health services. Primary care services include not only care for the physically ill, but also include care for emotional trauma, especially when this trauma results in physical illness. Service entities must be prepared to accomodate this broader emphasis which can best be explained through the concept of 'holistic care.' Holistic care means "viewing a person and his wellness from every possible perspective, taking into account every available concept and skill for the person's growth toward harmony and balance."⁴ It means treating the person, not the disease. It is not an alternative to conventional medical practice. Rather, it combines the best of modern medicine with a sound life syle. In holistic care, the physicians make

the diagnosis and treat symptoms just like their colleagues in conventional medical practice. In addition, the practitioners are looking for, and dealing with, the nonbiologic causes of the problems.

Much of the literature on primary care services has advocated the 'team approach' in the delivery of primary care services. This 'team approach' can effectively utilize different skill levels among different kinds of practitioners in order to deliver comprehensive and holistic care services. These team practitioners can include but are not limited to: physicians, nurses and nurse practitioners, technicians, physician assistants, health educators, psychologists, and nutritionists. Where the in house care by these varied practitioners is not feasible, a referral network should be available. In the comprehensive and holistic primary care model, a primary care service should be able to offer or refer a client to the following services in a manner which maintains continuity in the care of the client.

- a. Medical care services (in house or on referral)
 - basic diagnosis by a primary care practitioner
 - diagnostic laboratory and radiology
 - emergency services
 - access to acute inpatient care
 - access to home health services
 - dental services including diagnosis, treatment, and prevention
 - pharmacy services if a private pharmacy is not available
- b. Health and holistic care services
 - information and referral for services outside the primary care setting.
 - screening for basic diseases, vision, and hearing
 - immunizations
 - maternal and well-baby programs
 - alcoholism and drug abuse counseling
 - care for emotional problems
 - nutrition counseling
 - legal and social services (referral and/or services)

Cost

A national study is now being completed which will indicate the extent to which access is a problem in primary care delivery. The early findings of the report are significant. "Americans of all ages, of all races, of all income levels have greater access to health care services than ever before. And by and large, individually, they are pleased with the care they receive."⁵ The survey investigates five principal issues in access: source of care; utilization of care; need for care; the patient's satisfaction with care received; and cost of care. No issue rivaled cost as a cause of dissatisfaction (37 percent dissatisfied).

Findings from the Governor's Task Force on Rural Health stated that medically underserved counties in Missouri had more families below the poverty level, a high percentage of people over 65, a higher infant mortality rate, and a lower ratio of physicians to population than the remainder of the State. Many of these underserved counties (most of which are rural) also had no Medicaid facilities while containing a high percentage of eligible recipients.⁶ Low per capita income and lack of Medicaid reimburseable facilities have led to problem issues in financial accessibility. Barriers to financial accessibility should be lifted where possible.

It has been found that the use of alternative settings for the delivery of primary care has feasibility both in terms of cost-effectiveness and consumer familiarity. Such settings are found in the hospital and the local public health unit.

Traditionally, the hospital has cared for those consumers with acute and/or emergency conditions. Over time, the hospital's location and the services provided are utilized and, therefore, known to virtually all citizens. If one of the objectives of primary care is to make available certain health and wellness services at a known and accessible location the hospital may well be a logical choice. Utilization of unused rooms and ancillary space would help the financial position of the hospital and the community's health system economy as well. Other possible advantages include:

1. shared administration - cost efficient and quality effective;
2. shared ancillary services and medical personnel;
3. convenient location for physicians and known by consumers;
4. convenient to local transportation; and
5. increased continuity and utilization of a wide range of experience.

In view of the fact that the public has been given incentives to utilize the hospital, perhaps the recommended change should be in the range of services offered in the facility rather than in the perceptions and habits of the consumer.

The feasibility of expanding the use of rural public health units in the delivery of primary care services should be determined and, where possible, a program for implementation should be developed.

Possible areas for expansion of services include:

1. family counseling and patient advocacy;
2. extended wellness training;
3. extended school age health education/community health education;
4. community service referral center;
5. use as an umbrella agency (shared administrative and support services for various community service agencies); and
6. preventive medicine.

With expanded manpower capabilities, the public health units would be able to reach population sub-groups (not only the poor or the aged) who presently enter the health care system only when illness or disability becomes acute. It is in this area that real dollar savings can be made through the use of preventive methods.

Quality*

Acceptability*

Comparative Analysis

Availability/Accessibility

With respect to manpower, the Statewide Health Coordinating Council has stated that the problems are not so much those of total numbers of personnel as much as their distribution and medical speciality. Although a majority of illnesses require only general medical care, the proportionate number of physicians practicing 'general' medicine has been decreasing for decades. With increased specialization, middle-class families in the cities often have difficulty in locating a general care practitioner. Map A-0/PC-1, located in the appendix under Outpatient/Primary Care Services, describes the ratio of primary care physicians to total physicians by county.

Each of Missouri's Health Systems Plans addresses the primary care needs in their areas. Central to their discussions of primary care is an analysis of their physician manpower needs.

- HSA I "The combined primary care physician-to-population ratio in MAHSA's rural portion is 1:2770 (72 physicians for 199,300 people). While not falling in the range (less than 1:3000) which could qualify for federal designation as a primary care manpower shortage area, the ratio is inconsistent with desirable historical levels of primary care manpower, and it is 75 percent lower than its urban-suburban counterpart. Thus, the overall rural ratio of 1:2770, while perhaps adequate, is less than desirable. Within the urban-suburban portion of the Mid-America Health Systems Agency, ratios for combined primary care physicians-to-population show a ten-fold variation, ranging from 1:676-696 in Mid Kansas City to 1:6370-7630 in inner Kansas City, Kansas."⁷
- HSA II At the Area II level, progress can be seen in increasing the availability of primary medical care services. However, at the individual county level, the problem of availability and accessibility of primary care services has worsened. More counties in '77 were above the population to primary care physician ratio of 2000:1 and more physicians are needed to bring all of the deficient counties up to 2000:1 ratio...the areas with the largest shortages are in the following subareas: Lake of the Ozarks, Kaysinger Basin, MoKan, Show-Me, Mark Twain, and Boonlick."⁸
- HSA III "Based on the analysis of primary care services in the Greater St. Louis Health Service Area contained in the Ambulatory Care Component of the Health Systems Plan, the following areas were recommended and subsequently designated as Primary Care Shortage Areas in the July 17, 1978 Federal Register: (Missouri only) Jefferson and St. Charles Counties and North St. Louis and Southeast St. Louis City."⁹
- HSA IV "Area IV had a primary care FTE physician for every 1,966.39 people while in the State of Missouri as a whole was a physician for every 1,655 people. Among the subareas, the best ratio was in Ozark Gateway with a physician for every 1,735 people and the worst ration in South Central Ozarks with 1:3,100."¹⁰
- HSA V "There are twelve counties in Area V designated as primary care physician shortage areas and 21 entire or parts of counties designated as Medical Underserved Areas."¹¹

There are a number of Federal Programs designed to assist areas in meeting their primary care/manpower needs. Their purpose is to provide the initial cost or "seed" money to initiate primary care projects. The programs and criteria for eligibility are listed below. Please note that the "Health Underserved Rural Areas" program is different in purpose from the others. It supports expansion of services in existing provider institutions to allow for unmet needs.¹² Also listed below is a brief description of the area requirements for designation as medically underserved and health manpower shortage areas.

<u>Federal Manpower Designations</u>	<u>Area Requirements To Be So Designated</u>
Medically Underserved Areas	Ratio of physicians to population Infant Mortality Percent Population 65+ Percent Population with Family income below Poverty Level
Health Manpower Shortage Areas	Medically Underserved Area ¹³
<u>Program</u>	<u>Criteria/Designation for Program Eligibility</u>
Community Health Centers	Medically underserved areas
Rural Health Initiatives and Health Underserved Rural Areas	Medically underserved areas Health manpower shortage areas High infant mortality rural areas
Integrated Urban Health	Medically underserved areas Health manpower shortage areas High infant mortality areas Population at least 10,000
National Health Services Corps	Health manpower shortage areas ¹⁴

In regard to the use of alternative types of health manpower, the Governor's Task Force on Rural Health found that the physicians who practice in rural areas have been cautious about utilizing physician extenders (nurse practitioners, physician assistants) in such a way as to increase their own productivity. At issue have been legal barriers, such as malpractice suits involving the use of these practitioners. Also Missouri has not taken advantage of technology which could be utilized in conjunction with these lesser trained personnel to allow them to serve more effectively in rural communities.¹⁵

The distribution of health professionals is especially critical for primary care programs. A long-range solution must integrate economic incentives with the development of a health care system that links providers to appropriate practice programs. These programs may help to decrease professional isolation and help to increase the use of non-physician personnel. These non-physician personnel are available

to release the physician, as well as other 'non-physician' personnel, from repetitive tasks permitting them to have more time for other, more challenging problems thereby increasing productivity and job satisfaction.

Manpower shortages aggravate other problems of 'access' in primary care such as geographic accessibility and timely scheduling of appointments. The end result of all of these problems is an inadequate primary care delivery system in much of rural Missouri. The Governor's Task Force on Rural Health also reported that "a lesser number of health care programs were serving rural Missourians as compared with urban areas."¹⁶

Continuity

As discussed previously, a long-range solution must link providers to appropriate programs which decrease professional isolation and increase the use of non-physician personnel in order to heighten productivity. Taking this solution one step further involves bringing together a team and a "package" of primary care services. In doing so, better continuity of care could be achieved. The desired continuity of care is not present for most primary care patients. The Governor's Task Force on Rural Health reports, "a system for delivery of health care in a highly coordinated and integrated fashion was not prevalent in the state . . . prevention of ill health and proper use of health care services through some organized system appear to be lacking."¹⁷

Cost

By and large, private insurance policies have limited coverage for primary services. As addressed previously, Medicaid patients encounter problems of financial accessibility when health care providers do not participate in Medicaid. Medically indigent persons and/or the working poor who are not eligible for Medicaid also have problems of financial accessibility.

Use of alternative delivery settings for primary care in the hospital and the public health unit could conserve valuable health resources. At the minimum, it would have the clear advantages of setting up new services within existing, already familiar settings. While some primary care models already exist in these settings, more experimentation with comprehensive services is warranted.

The Division of Health and local county courts should be encouraged to determine the need for additional services at the local level. The Division of Health should be encouraged and supported in their efforts to seek major dollar appropriations for the expansion of manpower and services to these new population sub-groups. Service expansion to a larger 'user' population will require reallocation of existing funds as well as new appropriations. During the fiscal year 1980 appropriations process, the SHCC and the Division of Health should seek to inform members of the General Assembly as to the need and feasibility of primary care services in order to obtain funding in fiscal year 1981.

Accessibility*

Acceptability*

Problem Description

Availability/Accessibility

According to the Governor's Task Force on Rural Health:

"The problem of attracting and retaining physicians for rural Missouri has been a chronic one for years Studies indicate medical trade areas such as Anderson, Mountain Grove, Waynesville, Ironton, and Hayti/Carruthersville demonstrate the greatest need for physician manpower. Also these physicians were found to be older and not being replaced as they retired, reduced their practices, transferred to other places, or died. Consequently, a continuous erosion of physicians is occurring with little or no substantial change in this trend. Adequate incentives and programs which would demonstrably alter this process have not been established in proportion to the severity of the problem."¹⁸

As previously addressed, the capability to established primary care services in needy areas exists through Federal programs. An important issue is the continued maintenance of these services after the start-up funds run out or are withdrawn. This issue is not so much one of survival over the long run, as it is over the initial (3-5) years of operation. Marketing of the new services will be important. A plan or method for publicizing the program will be necessary as the ultimate test of the program is the extent to which patients use the services on a continuing basis. Key issues within the marketing approach include an understanding of the community's life style and cultural aspirations.

Continuity

Medicare will now reimburse for nurse practitioners who deliver care in a rural setting. Because we do not have a legal definition or sanction for the nurse practitioner as a mid-level practitioner, in Missouri, there are no provisions to meet Federal guidelines for compensation, payable under the physician/nurse practitioner (team concept) primary care delivery system. This barrier not only adversely affects the promotion of the team concept, but also the use of the practitioners to increase the physicians' productivity.

The appropriate mix of manpower in the team approach for primary care services is a serious problem. In order for the consumer to be comfortable with a practitioner who has different skills than a physician, the physician must also be comfortable. A very important aspect

of this entire component is the determination of what types of support personnel will be accepted by the consumer and how these personnel fit into a primary care program.

The issue of intensity is also important here. Referrals should be kept at a minimum, and if the team approach to primary care is used, there should be considerable coordination. Monitoring should exist to insure that services are of the appropriate intensity and that services are not being over utilized. A single contact within the program should assume the role of monitor/advocate for the consumer throughout his/her stay in the program.

Cost

The financial aspect of any community-based human services program are delicate at best. Historically, such programs often have had to be curtailed in comprehensiveness because of inadequate funding. In addition, the traditional delivery modes have helped, at a system-wide level, to drive up the cost of health care and, at a specific level, to allow for individual abuse and fraud. It is important to ensure that an appropriate mechanism for payment to and management of funds in a primary care program is developed. The use of an incentive system for cost consciousness should be considered. Such a system is the HMO concept where the physicians accept a pre-paid fee and for that fee provide all required health services. It is also important that the program accept Medicaid clients.

Goals, Objectives, and Actions

GOAL: TO INCREASE THE ACCESSIBILITY OF PRIMARY CARE SERVICES IN MISSOURI BY AUGMENTING THE EXISTING SYSTEM THROUGH THE USE OF ALTERNATIVE DELIVERY METHODS.

OBJECTIVE 1: By 1984, incentive and alternative education programs should be developed and initiated for the education and recruitment of manpower determined to be required to meet the primary care needs in Missouri.

Recommended Action 1: The expanded role of nursing practice as defined in the Missouri Nursing Practice Act should be clarified. This should include clarification of whether or not a nurse can work in solo practice and also what he/she can do in the absence of a physician.

Recommended Action 2: During 1980, each health systems agency should utilize local input to determine those geographic areas (by county or multiples of counties) which are most in need of primary care services.

Recommended Action 3: During 1980, local communities should be advised of their potential to qualify for a primary care program and the support for such a program should be evaluated.

OBJECTIVE 2: By 1981, the feasibility of altering the concept of the hospital as a setting primarily for acute care should be determined.

Recommended Action 1: By early 1980, the SHCC, working with the SHPDA and with the Missouri Hospital Association, should report on the potential of providing primary care services in a non-inpatient hospital setting.

Recommended Action 2: By 1980, the SHCC, in cooperation with the health systems agencies and the Missouri Hospital Association and its affiliates, should seek to implement experimental programs for the delivery of basic primary services in two hospitals (one urban and one rural) and the communities in their service areas. If indicated, by 1982, the program should be functional and by 1984, an evaluation made as to its feasibility and desirability for widespread use.

OBJECTIVE 3: By 1982, the feasibility of expanding the use of rural public health units in the delivery of primary care services should be determined, and, where possible, a program for implementation should be developed.

Recommended Action 1: Local public health units should seek to expand their efforts in the area of counseling, referral, wellness training, education, and administration.

OBJECTIVE 4: A study of alternative systems dealing with insurance, ownership, and various payment mechanisms should be completed and included in the overall model for primary care services.

Recommended Action 1: The Missouri Hospital Association and other professional health finance associations should be encouraged to be supportive of this study and should be involved in the development of all findings and recommendations.

ENDNOTES

¹David E. Rogers, "The Callenge of Primary Care," Daedalus, Journal of the American Academy of Arts and Science, 106:1 (Winter, 1977), p. 82.

²U.S. Department of Health, Education, and Welfare, "Building a Rural Health System," (Washington, D.C., 1976), p. 5.

³Health Systems Plans, (Buffalo: Health Systems Agency of Western New York, 1977), p. PC-8.

⁴Donald B. Ardell, High Level Wellness: An Alternative to Doctors, Drugs, and Diseases, (Emmans, PA. Rodale Press, 1977).

⁵Special Report: Access to Health Care, (Princeton, N.J.: Robert Wood Johnson Foundation, 1978), p. 3.

⁶Governor's Task Force on Rural Health, Recommendations from the Governor's Task Force on Rural Health (Jefferson City, 1979), p. 2.

⁷Mid-America Health Systems Agency, Health Systems Plan 1979-1984, (Kansas City, 1979), p. 3.7-62.

⁸Area II Health Systems Agency, Proposed Revisions to the Area II Health Systems Agency's First Health Systems Plan: 1978-1982, (Moberly, Missouri, 1978), p. 75.

⁹Greater St. Louis Health Systems Agency, Health Systems Plan Supplements, (St. Louis, 1978), p. A-M-6.

¹⁰Area IV Health Systems Agency, Area IV Health Systems Plan: 1979-1984, (Springfield, 1979), p. 67.

¹¹Area V Health Systems Agency, Area V Health Systems Plan: 1978-1984, (Poplar Bluff, Missouri, 1979), p. PC-8.

¹²Area IV Health Systems Agency, op.cit., p. 74.

¹³Ibid., p. 74.

¹⁴Ibid., p. 74.

¹⁵Governor's Task Force on Rural Health, op.cit., p. 2.

¹⁶Ibid., p. 3.

¹⁷Ibid., p. 3.

¹⁸Ibid., p. 2.



Mental Health Services

I. Introduction

A practical method of defining health or illness in a particular society or culture would be to "define a range of normality for psychological or biological functioning," based on that group's sociological character.¹ To many, this would seem to be an easy task; to others with a broader view of health and illness, it would appear to be an impossible task. English and Pearson have defined the following parameters that can be readily adopted to any society in describing the ideal normative functioning of a mature adult.

1. work usefully without undue fatigue or strain;
2. like and accept many lasting friendships and love and be affectionate with close friends;
3. conquer guilt, doubt, or indecision, and oppose impositions on himself/herself and his/her family;
4. treat all persons with appropriate respect;
5. give and receive love with joy;
6. advance his/her own welfare without exploitation of his/her fellow man/women;
7. extend his/her interests and seek to contribute to the general welfare;
8. alternate work with play; and
9. be dependable, truthful, openminded, and imbued with a philosophy that includes a willingness to grow, improve, and achieve wisdom; and be interested in passing on his/her knowledge to the young.²

Good mental health is not totally predicated on the possession of any of these attributes. However, the manner in which these attributes manifest themselves in an individual can determine how a society views "mental health". In the past, people were generally presumed to be mentally healthy if they were not affected with some outward sign of mental disorder or deficiency. Today, there is increasing recognition that problems associated with mental or emotional stress have many manifestations of varying severity and that "a balanced consideration of an individual's state of health demands attention to the whole (biopsychosocial) person."³ The association of physical, mental, and emotional dysfunction with social problems - drug and alcohol addiction, child abuse, and delinquency, for instance, and the personal discomfort accompanying them - are now beginning to be understood and acted upon.

An individual's life experiences (environment) are believed to have a major part in bringing about manifested mental or emotional

problems. However, these experiences are not satisfactory as a total explanation of mental health because under similar circumstances of stress some people develop mental or emotional illness and others remain essentially healthy. Severe or prolonged stress in a person's environment is undoubtedly a highly contributory factor and both prevention and treatment of mental and emotional disorders involve easing unnecessary stresses as well as helping individuals to cope with those that cannot be avoided. Government focus in recent years have been lessening traditional environmental problems of pollution, energy, population control, etc. Unfortunately, for mental health "consideration of how people cope with environmental stresses has been overshadowed by consideration of their effect on the environment."⁴

Mental health is a major concern in Missouri and the United States. "For the past few years, the most commonly used estimates have been that, at any one time, ten percent of the United States population needs some form of mental health services. This estimate has been used in national projects for the services and personnel needed to provide mental health care. There is new evidence that this figure may be nearer 15 percent of the population. As many as 25 percent of the population are estimated to suffer from mild to moderate depression, anxiety, and other indicators of emotional disorder at any given time. Although most of these problems do not constitute mental disorder as conventionally diagnosed, many of these individuals cope with these stresses with the aid of family, friends, or professionals outside the mental health system. These individuals constitute a significant portion of primary health care practice in the United States."⁵

Under the umbrella of mental health, alcohol and drug abuse are seen as serious problems. Prevalence data published by the State Division of Alcoholism and Drug Abuse indicate that there may be as many as one million persons affected by alcoholism in the State of Missouri including family and associates and 320,562 substance abusers (84 percent of these are alcohol abusers and 16 percent are drug abusers). This number is increasing at the rate of 6.55 per year and by 1981 it is projected that there will be 387,404 substance abusers in Missouri.* Teenagers and women have been identified as having significant problems not previously defined. It has been determined that drug and alcohol experimentation begin as early as grade school for many children. For some, this will lead to excessive and frequent use or dependence/addiction in late adolescence. Reports indicate that male alcohol and drug abusers outnumber female abusers, but female abusers have frequently been underreported in statistical analysis. Cultural constraints have often restricted female substance abusers to their homes, thus leading to underreporting of the problem's severity. The improved status of women will likely lead to better reporting and a consequently higher reported prevalence of abuse. Generally, across the total population, alcohol and drug abuse are on the rise.

* From the Division of Alcoholism and Drug Abuse, Missouri Department of Mental Health.

Although the focus of this component is mental health, the thrust of this plan is to recognize the relationship of mental health to the other parts of the health care delivery system and to form linkages with the appropriate state agencies directly involved with mental health care. The social, medical, and economic aspects of most mental disorders are of such significance that they cannot be considered exclusive of other health problems.

"A system of mental health must never be thought of as an independent entity. It does not exist outside the framework and social fabric of the larger culture, but rather is a fixed integral part of it. In particular, our system of mental health interacts with our system of religion and ethics, our economic system, and our political system."⁶ The mental health system should be considered within the framework of "society" and its norms; and further, any development of a system should be accomplished so that it provides effective service to those in need of mental health care.

Neither prevention nor treatment of mental and emotional disorders can be effective without regard to these social, medical, and economic needs, and indeed most solutions to mental health problems will be found only through broad community action for development and improvement of our quality of life.

National Goals⁷

To meet the needs of Americans with mental health problems we must affirm the goal that high quality mental health care should be available to all who need it at a reasonable cost.

This goal will not be reached quickly. It will require a concerted national effort. We will have to devote greater human and fiscal resources to mental health. There must be a more realistic balance in the allocation of resources between physical health and mental health. Only 12 percent of the Nation's general health care expenditures are for mental health services. This would hardly commensurate with the magnitude of mental health problems facing the Nation.

During the next decade we must take steps to:

- Develop networks of high quality, comprehensive mental health services throughout the country which are sufficiently flexible to respond to changing circumstances and to the diverse racial and cultural backgrounds of individuals. Wherever possible these services should be in local communities.
- Adequately finance mental health services with public and private funds.
- Assure that appropriately trained mental health personnel will be available where they are needed.

- Make available, where and when they are needed, services and personnel for populations with special needs, such as children, adolescents, and the elderly.
- Establish a national priority to meet the needs of people with chronic mental illness.
- Coordinate mental health services more closely with each other, with general health and other human services, and with those personal and social support systems that strengthen our neighborhoods and communities.
- Broaden the base of knowledge about the nature and treatment of mental disabilities.
- Undertake a concerted national effort to prevent mental disabilities.
- Assure that mental health services and programs operate within basic principles protecting human rights and guaranteeing freedom of choice.

Three Major Categories of Mental Health

Mental health services have traditionally been organized under three categories: substance abuse; mental/emotional dysfunction; and mental retardation/developmental disabilities. These three areas parallel the three service divisions of the Department of Mental Health and the funding procedures of Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services. In terms of prevention and service delivery, mental/emotional dysfunction and alcoholism/drug abuse share many common factors. Mental retardation/developmental disabilities will be discussed separately under each section since the system is often different and/or apart from the other two categories.

Substance Abuse

In 1980, the Division of Alcohol and Drug Abuse (Department of Mental Health) purchased or provided services for approximately 20,016 Missourians with substance abuse problems. Of these, 14,456 were alcohol and 5,560 were drug abuse clients. Additional services were provided by non-State facilities.

The extent of the problem and its cost has continued to increase. In 1979, 320,562 individuals suffered from substance abuse. The cost of the problem to Missourians is staggering. In 1976, the costs were estimated at 1.3 to 1.7 billion dollars per year and it is projected that the cost in 1981 will approach 2.4 to 3 billion dollars.*

* From the Division of Alcoholism and Drug Abuse, Missouri Department of Mental Health. This range is based on a five to ten percent discount rate.

Substance abuse is a condition not easily defined. Generally substance abuse can be viewed as a primary or secondary condition depending on specific conditions. It is recognized, however, that mental or emotional problems usually accompany substance abuse, and treatment directed at either alcohol or drug abuse must also attempt to reach these secondary conditions if a successful outcome is to be achieved.

The use of alcohol and/or drugs does not necessarily indicate abuse. In fact, substance abuse has been viewed as being limited to a relatively small number of individuals. However, the severity of the present problem has signified a move toward a more rational and inclusive societal definition. For the purpose of this component, substance abuse will be defined as follows:

Substance abuse, being a physical or psychological dependence or impairment, is the chronic and habitual use of alcohol or drugs to the extent that the user endangers the health, safety, or welfare of him/herself and others.⁸

Opinions on the number of individuals affected by either alcohol or drug abuse vary. It is widely agreed, however, that the incidence is highest among individuals in urban areas and among those of the very lowest and the very highest socio-economic groupings. Individuals falling between these two extremes (e.g., median socio-economic status) exhibit a lower yet still significant incidence of substance abuse.⁹

Intentional or unintentional overmedication of the aged has been a concern in Missouri and the Nation for some time.¹⁰ The fastest growing group of substance "misusers" are persons 65 years of age and older. Nationally in 1976, nearly six million prescriptions for "Valium" (a major tranquilizer) were written for persons 65 and over.¹¹ Most of these prescriptions were written by general practitioners. The aged have often had tranquilizers prescribed for them on a "use as needed" basis. In fact, many prescriptions are not related to a patient's medically defined condition. This is exemplified by the practice of overmedication of residents in nursing homes in order to keep them "docile and quite". A nursing home expert on the staff of the United States Senate Special Committee on Aging has summarized the problem in his estimation that "fifty percent of the nursing homes in the United States have a serious problem . . . with the amount of tranquilizers given to patients."¹²

The relationship of substance abuse to women is a relatively new and unexplored area, particularly in terms of substantive data and program activities. Until recently, the need for programs targeted toward the female population was not recognized. However, given the impetus of the "women's movement" and the resulting changes in the perceived and actual role of women, substance abuse has become a major concern.

Substance abuse is directly linked to many serious health problems ranging from direct injury (broken bones, frostbite, etc.) and

infections to diseases that manifest themselves as structural body damage to the heart, liver, and brain. It becomes apparent that the total health of an individual is intrinsically linked to mental/emotional health.

Mental/Emotional Dysfunction

Mental illness or dysfunction is one of Missouri's heaviest medical, social, and economic burdens.¹³ In terms of human suffering, it is difficult to calculate the effect of this concern.

There is no definitive way to estimate "unmet" needs for mental health services, although work is progressing in that direction. Estimates indicate that about 15 percent of Missouri's population, approximately 750,000 persons, are in need of psychiatric services (using a broad definition of mental disturbance).

Although 15 percent of Missouri's population may be in need of treatment, resources, motivation, and opportunity generally preclude that only about eight percent of those in need of treatment (two percent of the population) are receiving treatment. The Department of Mental Health, through its facilities and the services it purchased, serviced 108,768 patients in 1979. Private providers serve some lesser number.

From data estimates concerning treatment of schizophrenia, the state appears to be treating the major portion of schizophrenics. Persons suffering from depression, however, are estimated to be greatly underserved by the Department of Mental Health. Treatment for depression is also performed by professionals in private practice, and yet, even with the combined actions of the governmental and private sectors, it is estimated that less than one out of five persons who are clinically in need receive treatment.

Special attention is also being drawn toward serving other subgroups in our population. Cultural and social minorities have mental health problems magnified beyond the scope of their representation in the population (17 percent). The income level, housing, education, and overall health status are substantially below that for the nation. These groups suffer from stresses of prejudice and racism and are overrepresented by negative health status in certain parts of the mental health system. Evidence is mounting that mental health services are not adequately meeting their needs.¹⁴

Another problem is posed by the fact that more than 12 percent of the population in Missouri is age 65 and over and that proportion is increasing. Psycho-social problems, especially depression, rise with age. "Those over 65 occupy 29 percent of all public mental hospital beds, three times their proportionate share."¹⁵ Evidence, therefore, is mounting that the specific mental health needs of the aged have remained relatively unfulfilled.

Ideally, the objective of the mental health system is to serve all those in need. As pointed out by the Committee on Comprehensive Health Planning of the American Psychiatric Association, "Implicit in the development of mental health programs has been the attempt to approach the individual as well as the development of health care services in a holistic manner - which includes consideration of environmental factors. Thus, mental health programs have been . . . intertwined in the delivery of physical health service." It is further pointed out that "mental health services interfacing with other human services such as education, correction, and social welfare provide vital opportunities for the early detection of, and intervention into, situations which can lead to mental health systems in an advantageous position to deal knowledgeably with the planning of health services and programs which are community oriented, geared towards prevention and early intervention, emphasize ambulatory care and deinstitutionalization, and have the capacity to provide services to the chronically ill".

Mental Retardation/Developmental Disabilities

As contained in Public Law 95-602, the Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendment of 1978, the terms "developmental disability" means a severe, chronic disability of a person which:

- (A) is attributable to mental or physical impairment or a combination of mental and physical impairments;
- (B) is manifested before the person attains age twenty-two;
- (C) is likely to continue indefinitely;
- (D) results in substantial functional limitations in three or more of the following areas of major life activities;
 - (i) self-care
 - (ii) receptive and expressive language
 - (iii) learning
 - (iv) mobility
 - (v) self-direction
 - (vi) capacity for independent living, and
 - (vii) economic self-sufficiency; and
- (E) reflects the person's need for a combination and sequence of special, interdisciplinary, or generic care, treatment, or other services which are individually planned and coordinated.

According to the Division of Mental Retardation/Developmental Disabilities, the developmentally disabled population will total 333,045 in 1981. Services to this group are provided by a number of agencies besides the Department of Mental Health. The Department of Elementary and Secondary Education and the Department of Social Services provide a large portion of the services to this group. Coordination among the agencies is of particular importance in providing care for developmentally disabled persons.

The Department of Mental Health

The Mental Health Commission is a seven member body appointed by the governor with the responsibility of selecting the Director of the Department of Mental Health and advising the director on developing and maintaining programs and services. The Commission has established the following mission statement for the Department of Mental Health.

The mission of the Department of Mental Health is to seek to: (1) reduce the incidence and prevalence of mental disorder, developmental disabilities, and substance abuse through primary, secondary, and tertiary prevention; (2) maintain and enhance the intellectual, interpersonal, and functional skills of individuals affected by mental disorders, developmental disabilities, and substance abuse through modern restrictive environment possibilities; and (3) improve public understanding of, and attitudes towards, mental disorders, developmental disabilities, and substance abuse.¹⁶

The Mental Health Commission has also endorsed the following policy statement:

In order to effectively and efficiently fulfill this mission, the Department of Mental Health will seek to:

- (1) provide leadership in working with other public and private providers of mental health services, as well as other health, social, and human services, and with consumers to secure the existence of an integrated and coordinated system for the delivery of mental health services which readily allows for movement of an individual from one level, site, or sector of care to another, as appropriate;
- (2) maximize the development of its human and material resources;
- (3) ensure, to the extent its resources allow, that all Missourians, based on professional evaluation of the nature and degree of this need, have access to appropriate and affordable mental health services of high quality;
- (4) constantly improve prevention, treatment, and habilitation techniques and skills through research and training activities;
- (5) secure both consumer and professional advice regarding the development of its programs and services; and
- (6) encourage financing mental health services through a combined approach involving Federal, State, and local resources, along with fees and third-party payment.¹⁷

The Department of Mental Health is divided into three major divisions which correspond to the three categories in Mental Health: The Department of Alcoholism and Drug Abuse; the Division of Comprehensive Psychiatric Services; and the Division of Mental Retardation/Developmental Disabilities (MR/DD). The following description of programs is taken from the draft Department of Mental Health Plan.

The Division of Alcoholism and Drug Abuse

In FY 80, the Division of Alcoholism and Drug Abuse purchased or provided services for approximately 61,895 persons. The Division purchases substance abuse services for medical detoxification, to outpatient counseling, methadone maintenance, and residential care. In addition, the five state psychiatric hospitals and three state Community Mental Health Centers operate inpatient and outpatient substance abuse programs.

The Division of Comprehensive Psychiatric Services

The Division of Comprehensive Psychiatric Services operates five psychiatric hospitals and three mental health centers, and purchases services from several non-State Community Mental Health Centers, clinics, and other private providers. In FY 80, the Division directly provided services through its facilities to 42,971 persons, and purchased services for an additional 21,858 persons.

The Division of Mental Retardation/Developmental Disabilities

The Division of Mental Retardation/Developmental Disabilities operates five residential facilities which focus primarily on long-term services for the mentally retarded and developmentally disabled. The Division also operates eleven Regional Diagnostic Centers which offer short-term inpatient care, but which focus on evaluation and diagnosis, referral, and outpatient services.

In addition to the Department of Mental Health, the Department of Social Services, and Elementary and Secondary Education are the primary state agencies offering services to the developmentally disabled. There is also a State Planning Council which acts as an advisory body to the Department of Mental Health. This Council relies upon eleven regional developmental disability councils to advise and assist it in establishing goals, priorities, and in conduction planning activities. Goals and objectives for the State MR/DD plan are established with input from the regional councils. The State Planning Council also promotes interagency coordination by including representatives from public and voluntary agencies in its membership. It appears that there are areas of considerable overlap between the MR/DD system, other mental health services, and the health care delivery system; however, the MR/DD system has developed a service delivery system which has become a model for mental health care delivery.

Grants and Contract

In addition to the direct provision of services, the Department of Mental Health subcontracts some monies to other providers through four funding mechanisms:¹⁸

Purchase of Service (POS) Contracts: This mechanism is used to purchase treatment services which can be clearly identified and described in terms of units of service, e.g., patient days, one-half hour individual counseling sessions, miles of transportation provided per client, etc. The Department contracts with service providers to provide a specified number of units of service at a specified price per unit. Providers are reimbursed for units of service actually provided to clients.

Invitation for Bid (IFB) Contracts: This mechanism is used to purchase services which cannot be defined with the specificity required under the POS mechanism. Services purchased through this mechanism are generally non-treatment services or other services involving statewide activity such as prevention programs, need assessments, and demonstration programs such as the detox extender program.

The NIDA Statewide Services Contracts (SWSC): As the single State Agency for Drug Abuse Services, the Department also administers the NIDA direct grants to seven vendors in the St. Louis and Kansas City areas for the provision of drug abuse services totaling in excess of \$1.5 million in FY 80. These contracts are administered by the Contracts Management Section of the Division of Alcoholism and Drug Abuse.

Community Placement Contracts: The Department administers approximately 8,200 contracts with 1,200 Community Placement vendors such as group homes, nursing homes, residential care facilities, foster homes, residential learning centers, and the client's natural home. These contracts provide for a monthly reimbursement of a negotiated amount for specified care and services to a client. The amount of reimbursement is based on the type of facility and the services provided.

Department-Wide Services

There are two key programs which cross all of the division:

The Community Placement Program

The purpose of the Community Placement Program is to assure that mentally ill, mentally retarded, and developmentally disabled clients receive care, treatment, and habilitation in the least restrictive environment appropriate by providing a variety of alternatives to institutionalization in State facilities.

The Civil Commitment Program

The Department is responsible for supervising implementation of Missouri's civil involuntary commitment statute. Under this statute,

individuals suffering from a mental disorder and presenting a likelihood of serious physical harm to themselves or others may be committed to a mental health facility against their will. Initial commitment is for a period not to exceed 96 hours. During this period the person is evaluated and a petition for additional commitment may be filed.

The Department of Mental Health provides the major portion of all services administered by State departments and/or divisions in Missouri. However, the Division of Health and the Department of Elementary and Secondary Education have programs having impact on the three areas of Mental Health.

The Division of Health

The majority of the Division of Health programs that affect mental health are targeted at prevention, especially of mental retardation. The Division of Health is administratively divided into seven sections, each of which is composed of several bureaus. Geographically, Division of Health services are administered through the central office, the seven district offices, or local health units. Some programs are administered through all three levels and others are concentrated in the central office. Of the seven sections, one deals with management of the Division and a second is responsible for data (State Center for Health Statistics). The other five have some programs which affect mental health.

The Section for Disease Control, through its Bureau of Dental Health, provides training for dental students in the treatment of mentally handicapped children. Through the Bureau of Nutrition Services, Bureau of Venereal Diseases, and Bureau of Immunizable Diseases, this section administers programs which aid in the prevention of mental retardation.

The Section of Local Health Services, through the Bureau of Community Health Nursing and the Bureau of Community Health Education, has programs which provide both prevention and treatment for the full range of mental illnesses.

The Section of Hospital and Technical Services, through the Bureau of Emergency Medical Services, addresses emergency care for the emotionally disturbed and alcohol/drug abuser.

The Section of Laboratory Services is responsible for administering tests for several conditions which can result in mental retardation if not detected and treated early.

The three bureaus of the Section of Medical Care, Bureau of Maternal and Child Health, Bureau of Prevention of Mental Retardation, and the Missouri Crippled Children's Services, are integrally involved in programs providing prevention and treatment of mental illness.

The Department of Elementary and Secondary Education

The Division of Special Education within the Department administers programs for special children in Missouri. This group of children includes mentally retarded, learning disabled, and emotionally disturbed children if they meet the criteria for inclusion in special programs, as defined in Public Law 94-142 and the State statutes (Section 162.670). In addition, the Division of Vocational Education provides training for special children.

The counsellors in the school systems, to a greater or lesser degree, depending on the school district, provide screening and, to a lesser degree, counselling for children with emotional problems. The Department has a health education section which has developed A Guide for Comprehensive School Health Instruction Program.¹⁹ The Guide encourages instruction on the disease characteristics of alcoholism and drug abuse and mental/emotional dysfunction. The Commissioner has established a task force to develop a strategy to deal with alcoholism and drug abuse in the schools in the 1980's.

Other State Programs

The above description of State programs describes the departments and/or divisions with major resources allocated to mental health related problems. There are other programs not described. The Division of Family Services has a program on child abuse and neglect, assigns caseworkers to troubled families for a range of services, and administers funds which reimburse for some mental health services. The Division of Aging is responsible for administering the State's new nursing home licensure law affecting the quality of care for many persons with chronic mental dysfunctions.

The Department of Corrections, the Highway Patrol, and the Division of Youth Services also have programs which affect mental health, particularly in the area of alcoholism and drug abuse. The Division of Alcoholism and Drug Abuse (DMH) established an interagency council on substance abuse which has greatly facilitated the exchange of information between State agencies that have programs for substance abuse.

Community Health Services

There is a basic lack of information on the causes of mental/emotional dysfunction and alcoholism/drug abuse. Lack of this information has hindered development of prevention programs. The President's Commission on Mental Health has recommended developing a base of information using the following six questions as a guide: 1) What groups of people are at high risk of developing illness or emotional disorder? 2) What factors contribute to the risk and what is the relative importance of each of these factors? 3) Can we effectively reduce or eliminate the most significant of these risk factors? 4) Does eliminating them effectively lower the rate of emotional disorder or mental illness? 5) If it does, are the costs of intervention justified by the benefits obtained? 6) Are the programs responsive to the principles governing both the rights of the individual and the rights of society?

With these six questions in mind, avenues that might be usefully pursued include: a) reducing the stressful effects of life crises experienced such as unemployment, retirement, bereavement, and marital disruptions due to death or other circumstances, and b) analyzing and understanding the nature of social environments, including those of hospitals and other institutions, so that, as an ultimate goal, environments may be created in which people achieve their full potential. Although effective programs to reduce distress and emotional disorder can and should be developed for the entire life span, we believe that helping children must be the nation's first priority in preventing mental disability.²⁰

Lifestyles and environmental factors are of increasing importances in understanding mental/emotional dysfunction and alcoholism/drug abuse. A widely accepted explanation of the underutilizing cause of mental/emotional dysfunction and alcoholism/drug abuse today is the degree of stress experienced in our society. The high rate of family disruption, including divorce, frequency of moves, the increase of working women with school age children, the increased percentage of elderly in our population (who are susceptible to a range of stresses) are all factors to account for a large portion of mental health problems.

Of key importance are programs designed to encourage healthy lifestyles and improve environmental factors affecting health. Target populations for these programs are children and youth, and women. Programs designed to support the needs of children, including the family unit, using the broad definition of family which includes single parent families, extended families, etc. It is important to detect and attempt to correct at the earliest stage problems of physical, emotional and cognitive development which can lead to emotional maladjustment and learning difficulties. The President's Commission on Mental Health recommended that:

A periodic comprehensive, developmental assessment be available to all children, with consent of parents and with maximal parental involvement in all stages of the process.²¹

Developmental day care programs, foster care, and out-of-home care for children were among the recommendations from the President's Commission on Mental Health. With the growing number of working mothers - 51 percent of the mothers of school age children are employed, and many mothers work in order to meet subsistence needs - many families urgently need more and better day care for their children. There are currently not enough programs available. There are a variety of child care options which could be explored. Research has shown that child care programs which focus on emotional and cognitive development can help to promote positive mental health.

Children placed in foster care and out-of-house placements which last longer than a year, or when multiple placements occur, are less likely to return to their natural parents. They are also more likely to develop significant emotional problems. Many of these children are placed without adequate prior evaluation or attempts at counseling or support for their families. More over, many children in placement receive no re-evaluation or follow-up for extended periods of time.

Strong family support services and programs can prevent unnecessary and inappropriate foster care or other out-of-home placements and the difficulties which often result. Current placement patterns provide for removal of children from their homes but prevent them from being returned home or placed in other permanent living situations. When children are candidates for out-of-home placement, there should be prior evaluation of the child and of the need for such placement. Family counseling and support should be available.²²

Another important area for reaching children and youth concerning emotional and alcohol/drug abuse problems is through programs administered in school health education and counseling programs. The comprehensive school health education program developed by the Department of Elementary and Secondary Education has a section on mental/emotional dysfunctions and a section on substance abuse. This program has been implemented in a few school districts in Missouri.

Substance abuse is a serious problem among youth, and unfortunately there have been few solutions offered to the problem of communicating the dangers of abuse and addiction. Recently substance abuse education has been given serious consideration as a part of a prepared school health curriculum. The Division of Alcoholism and Drug Abuse developed primary prevention demonstration projects under this program.

Information does exist on the causes of mental retardation. Good prenatal and perinatal* care, including adequate nutritional levels for mothers and infants, can prevent certain condition which may lead to mental disability and detect others early enough for effective treatment (certain metabolic disorders, the most common is Phenylketonuria [PKU]). Lead poisoning and excessive alcohol ingestion during

* Perinatal period is the period which includes the last trimester of pregnancy through the first 28 days of life. This period has been found to be of special importance in regard to fetal and infant mortality and morbidity.

pregnancy (fetal alcohol syndrome) are other preventable causes of mental disability. There are various types of inherited mental retardation and genetic disorders which can be detected by amniocentesis during pregnancy.

State level programs for the prevention of mental retardation are centered within the Division of Health. The Division of Health also has a screening program for PKU which is a metabolic disorder which if undetected and untreated during the early months of life, result in mental retardation. For a full discussion of the importance of adequate care during prenatal and perinatal periods, see the Maternal and Health section.

The Department of Mental Health operates one program for the prevention of mental retardation which focuses on fetal alcohol syndrome. Fetal alcohol syndrome is the name of a series of characteristics manifested in an infant or child, which includes mental impairment. This set of characteristics is known to be caused by alcohol ingestion by the mothers during her pregnancy. The Division of Alcoholism and Drug Abuse, in cooperation with other agencies, has instituted a program to inform the public of the dangers of drinking while pregnant. This program is aimed at a broad audience including the teenage population, providers of prenatal care (especially county health nurses) and the general population. The coordination of activities at the State level is through its Interagency Substance Abuse Council.

Personal Services

Individual prevention, detection, and referral services are primary prevention services which encourage healthy lifestyles and the avoidance of health risks; as well as early identification or detection of disease, ill-health, or disability. These services also provide assistance in entering the service delivery system at the appropriate intake point. The Division of Mental Retardation/Developmental Disabilities (MR/DD) has given priority to early intervention programs and is supporting the State and Regional Planning Councils in their recognition of early intervention programs as being major planning and budget priorities.

The Division of Mental Retardation/Developmental Disabilities operates eleven Regional Diagnostic Centers which focus on evaluation, diagnosis, and referral services. Several regional centers have early intervention programs, including infant stimulation. Through the DD Formula Grant Program, the Division provides start-up funds for a variety of programs including infant stimulation programs and pre-school programs. These programs are of extreme importance due to the large DD population under the age of five. In FY 80, 56.2 percent of the DD children ages 3-4 and 17.3 percent of the DD children ages 0-2 were served by the Division of Mental Retardation/Developmental Disabilities.

The Division of Alcohol and Drug Abuse provides crisis intervention programs and Employees Assistance Programs (EAP). Through the Invitation for Bid (IFB) system, the Division provides support for five programs which have a special emphasis on serving women and the objective of early identification and intervention of substance abuse. The five programs are a crisis hotline, emergency shelter, child care, outreach and educational services.

The Division is also supportive of an employees assistance program and conducts annual workshops for providers which focus on improving the provider's skills in marketing, community relations, union management, and evaluation. The Division also reviews the current employee assistance programs as they relate to the assessability of services in the Statewide EAP network.

Assessment and evaluation services are services which focus on the assessment or evaluation of disabilities and the subsequent development of a habilitation plan. Treatment services are services for identifying and alleviating disease, ill-health, or physical disability. Many of these services are provided through federally funded Community Mental Health Centers. Among the services which a federally funded Community Mental Health Center must provide are:

1. inpatient,
2. outpatient,
3. day care and partial hospitalization,
4. emergency treatment,
5. specialized services to children,

6. specialized services to the elderly,
7. consultation and education,
8. screening for referral to State hospitals,
9. follow-up care,
10. transitional half-way houses,
11. specialized services for the prevention and treatment of alcoholism, and
12. specialized services for the prevention and treatment of drug abuse.

Of the twelve services, eight refer directly to outpatient, acute inpatient, and emergency medical services; two, those dealing with alcohol and drug abuse, refer to a full range of mental health services; one refers to prevention (consultation and education) and one deals directly with habilitation and rehabilitation (half-way houses).

The Division of Alcohol and Drug Abuse purchased or provided services for approximately 14,456 alcohol and 5,560 drug abuse clients. Eighty percent of the budget is used to purchase substance abuse services from 70 community-based vendors. The services purchased range from medical detoxification, to outpatient counseling, to residential care. In addition, the five State psychiatric hospitals and three State mental health centers operate inpatient and outpatient substance abuse programs.

The Division of Comprehensive Psychiatric Services served persons in FY 80 through its five psychiatric hospitals and three mental health centers. In addition to the State hospitals and mental health centers, there are nine non-State community mental health centers.

The Department of Mental Health has instituted the Purchase of Services (POS) and the Invitation for Bid (IFB) systems which are aimed at increasing the availability of services and lowering cost.

The following are examples of evaluation services which are purchased through the POS mechanism: medical, social, psychiatric, psychological, educational, vocational, perceptual motor, adoptive behavior/developmental, audiological and speech.

Habilitation services are services aimed at enhancing an individual's intellectual, emotional, social, vocational and physical growth. Daily living services are services which provide or assist individuals to secure appropriate housing, employment, education and recreation.

Through the DD Formula Grant Program, the Division of Mental Retardation/Developmental Disabilities provides funds for a variety of programs aimed at filling gaps in services provided to people with the developmental disabilities. FY 80 grants funded recreation programs in Osage Beach and West Plains, expansion of pre-school program services in Independence, adult activity programs in St. Louis, establishment of a group home in Bethany, establishment of an adult day activity and training program in Sedalia, and expansion of a transportation system in Columbia.

The Division of MR/DD operates five long-term residential habilitation facilities and eleven regional centers. The primary mission of the five long-term habilitation facilities is to provide appropriate cure, treatment and habilitation in a residential setting for those mentally retarded-developmentally disabled persons who are unable to live within the mainstream of society due to the severity of their handicapping condition.

The Community Placement Program is to assure that mentally ill, mentally retarded and developmentally disabled clients receive care, treatment, and habilitation in the least restrictive environment appropriate by providing a variety of alternatives to institutionalization. At present this program is serving more than clients by providing a wide variety of community-based residential services and special living arrangements. Clients are placed in nursing and boarding homes, foster homes, group homes, residential care centers, residential schools or training centers, and their own family homes.

The Division of Comprehensive Psychiatric Services operates three Youth Centers which focus on meeting the special needs of children and youth. These centers are located at St. Louis State Hospital, Fulton State Hospital, and St. Joseph State Hospital. In addition, the Division employs a coordinator of child and youth services who serves as an advocate for children and youth to assure that the Division's mental health services provide for the special needs of children and youth.

The Division of Alcohol and Drug Abuse provides services through the purchase of services and through direct provision of care. Overall, POS service units tend to face within a continuum of care, i.e., detox, evaluation and diagnosis, inpatient treatment, outpatient counseling and residential treatment and care. These ancillary units included the following: dental care, social skills group (alcohol only), medical treatment and employment readiness counseling units.

Support Services

Individual support services are services which eliminate or alleviate social, legal, psychological or physical barriers to the optimal use of direct services, and assure protection of individual rights. This includes advocacy, transportation, legal, and other such services.

The Division of Mental Retardation/Developmental Disabilities provides legal and transportation services through the purchase of service system. Developmental Disabilities Formula Grant Program, has provided start-up funds for transportation systems.

Other Developmental Disabilities projects include support of research projects to study effects of epilepsy and anti-convulsant drugs upon learning and support of the Missouri Developmental Disabilities Protection and Advocacy Services to establish a statewide legislative coalition and related services.

Lack of transportation is seen as one of the greatest barriers to receiving services both by clients and service providers of alcohol and drug abuse services. The Division of Alcohol and Drug Abuse has included transportation services as an allowable cost within the current contracting mechanism.

Six services accounted for approximately 82 percent of all of the Division of Comprehensive Psychiatric Services purchase of service expenditures and person served in FY 80. These services relate to individual and family support services. The six services are:

- Psychotherapy (Individual, Family, and Interpersonal Counseling),
- Inpatient Services,
- Transportation,
- Evaluation and Diagnosis,
- Day Treatment, and
- Medical Treatment.

Psychotherapy (Individual, Family, and Interpersonal Counseling) accounted for the largest percentage of expenditures and the second largest percentage of persons served. The number of persons served by the transportation services has remained constant while the cost has decreased.

The Division of Alcohol and Drug Abuse used 43 percent of the Division's purchase of service budget on outpatient counseling. Individual counseling accounted for 26 percent of the expenditures for drug programs. Family and interpersonal counseling units for individuals accounted for another 12 percent and seven percent in alcohol and drug programs respectively.

Within each of the three divisions of the Department of Mental Health they provide individual and family support services through purchase of service. Types of services provided through the purchase of service mechanism include the following.

TYPES OF SERVICES PURCHASED THROUGH THE POS MECHANISM

Family and Interpersonal Counseling	Employment Related Counseling
Educational Counseling	Recreation Services
Evaluation Services:	Education-Classroom
Medical	Detoxification
Perceptual Motor	Occupational Therapy
Social	Communication Skills Improvement
Adaptive Behavior/	Inpatient Services
Developmental	Employment Readiness
Psychiatric	Presheeltered Workshop Training
Psychological	Psychiatric Therapy
Audiological	Planning and Referral
Educational	Activity Therapy
Speech	Psychiatric Counseling
Vocational	Health-Related Counseling
Alcohol Abuse Counseling	Dental Services
Drug Abuse Counseling	Hearing Therapy
Social Group Skills	Educational Tutoring
Day Care for Adults	Legal Services
Transportation	Preventive Services:
Residential Treatment	Case-oriented Consultation
Supportive Therapy	Staff-oriented Consultation
Developmental Training	Program-oriented Consultation
Physical Therapy	Public Information/Education
Speech Therapy	
Day Treatment/Partial Hospitalization	
Initial Referral	
Language Therapy	
Day Care for Children	
Medical Treatment	

Programmatic and institutional support services are concerned with the functioning of programs and institutions. Monitoring and evaluation services are used in each of the divisions as a means of reviewing programs for effectiveness.

Within the Division of Mental Retardation/Developmental Disabilities, uniform definitions of services have been developed for the purchase of service programs. The Community Placement program is revising facility and program standards. Both of these actions will improve the Department's ability to monitor and evaluate programs.

The Division of Alcohol and Drug Abuse has an ongoing evaluation of programs and accessibility standards. A comprehensive recovery service model spells out requirements of each program and will be used in implementing a statewide case management program.

Comprehensive service models of services in each of the three divisions will facilitate effective monitoring and evaluation of services provided.

System Development Services

Planning is a process which articulates community expectations, specifics goals and objectives, establishes alternative actions, cites steps for implementation of the selected actions, and compares actual to intended results. The Department of Mental Health has developed a triennial plan which undergoes major revision every three years and is updated on an annual basis. A triennial plan solves many of the problems of timing (due to the difference in state and federal fiscal years), and allows for a more significant impact on state budget development.

The Department is developing, and is in the process of, implementing a model system of services for each division of the Department. A comprehensive service model includes criteria for assuring an equitable distribution of resources.

A comprehensive recovery service model is used by the Division of Alcohol and Drug Abuse. This service model includes: service definitions, staffing patterns, and criteria for assuring an equitable distribution of services.

The Division of Comprehensive Psychiatric Services has a Care/Intermediate/Full Service Clinic model which it uses in evaluation of services provided or needed in an area. A comprehensive service model for psychiatric services addresses state hospitals and mental health centers, as well as non-state operated intermediate and long-term psychiatric care.

A comprehensive service model of services for the Division of Mental Retardation/Developmental Disabilities has been partially developed. A service model will be developed and used for assuring equitable distribution of services and criteria for evaluation.

The Department of Mental Health, in coordination with the State Health Planning and Development Agency (SHPDA) and the Missouri Health Coordinating Council (MHCC), established a Psychiatric Bed Need Methodology Task Force. This task force was to develop a methodology to be used by the Department of Mental Health and the SHPDA in determining the need for psychiatric beds and alcohol and drug abuse beds. Copies of the task force reports follow as an appendix to this component.

Resource allocation activities are designed to maintain an appropriate supply of personnel, facilities and equipment. The Department has been concerned with the availability and turn over rate of qualified personnel for all levels within the Department. The Department is instituting a program to improve retention and appropriate utilization of employees by expanding identification of education, skills, and career paths.

The Department is also developing standard staffing patterns to meet legal mandates, accreditation and certification standards. The Department is also encouraging cooperation between professional schools and programs within the various divisions for training of personnel and field placement of interested students.

Regulation and quality assurance are procedures and regulations which influence, control, set standards, or evaluate services, personnel, equipment and facilities. The department is developing standards for the certification of all mental health and MR/DD programs which receive financial support from the Department. These standards will be used to ensure quality care for clients receiving community services. The department is also attempting to regain JCAH accreditation for the state hospitals.

The Department, in accordance with Section 630.735 and 630.705.3, RSMo, is to license/certify all residential facilities and programs serving the mentally retarded, developmentally disabled, mentally ill, and mentally disordered. The Department is trying to standardize the application of licensure standards, procedures and policies relating to community placement licensing.

One of the major problems in the provision of mental health services is the lack of adequate financing. Medicare, Medicaid, and private health insurance policies provide limited reimbursement for mental health services. The inpatient coverage is generally much lower than for other health problems and outpatient coverage is almost nonexistent. Many who need mental health care cannot afford the care they need. The President's Commission on Mental Health recommended the following principles for financing care:

Any national health insurance program and all existing private health insurance programs and public programs financing mental health care, such as Medicare and Medicaid, be governed by the following guidelines:

- a) Benefits. A reasonable array of emergency, outpatient, and inpatient care should be covered, including partial hospitalization and 24-hour residential treatment for children and adolescents, sufficient to permit treatment of mental disorders in the most appropriate and least restrictive setting.
- b) Reimbursement. Reimbursement should be provided for those mental health services involving the direct care of the patient and for care rendered to others where it is integral to the patient's treatment.

In the case of care provided in organized settings or systems of care, reimbursement should be made to the system rather than to the practitioner providing the care. All covered services must be rendered by, or be under the direct clinical supervision of, a physician, psychologist, social worker, or nurse with an earned doctorate or master's degree and with appropriate clinical competence as established by State licensure or certification by a national body.

Direct reimbursement should be made to independent qualified mental health practitioners as defined by national health insurance legislation. This issue should be re-examined under existing legislation.

Adequate provision for controlling costs and peer review should exist.

- c) Cost Sharing. There should be minimal patient-borne cost sharing for emergency care. In all other instances, patient-borne cost sharing, through co-payments and deductibles for evaluation, diagnosis, and short-term therapy, should be no greater than that for a comparable course of physical illness.
- d) Freedom of Choice. The consumer should have a choice of provider and provider systems, and procedures should be developed to ensure that individuals have the necessary knowledge and information to make an effective choice.

If these principles were adhered to, many of the financial barriers that currently prevent individuals from receiving needed care would be eliminated and many of the fiscal dilemmas confronting organized mental health care settings in the community would be resolved. We would also have a more rational and systematic way to ensure the availability of an appropriate array of mental health services than we now have, and would have done much to correct the strong bias toward inpatient and institutional care currently exhibited by public and private health insurance programs.

As we move toward implementing these principles, however, there are other steps that should be taken, including:

--Short-range changes in the financing of mental health services through existing public mechanisms and through private insurance plans; and

--A new approach for financing long-term care for persons with chronic mental illness.

The DD Program has also provided financial support for public education campaigns aimed at promoting passage of county mill taxes for support of services to the developmentally disabled. Thirty-five counties have passed such a tax, referred to as "Senate Bill 40". It is estimated that over \$8 million is generated by this tax annually statewide. Revenue from the tax is used for a variety of programs including group homes, transportation, and sheltered workshops.

The Department has particular interest in research into the causes, courses, and cures of alcohol and drug abuse, mental illness, mental retardation and other developmental disabilities. The Professional Review Committee reviews and approves any research project involving clients of the Department. The Department encourages any research which could improve mental health.

Evaluation is a systematic analysis of data and information to assess the progress toward the achievement of goals and objectives. The comprehensive service models for each division include criteria for evaluating each program, therefore the methods for evaluation are determined and will be an on going process.

Goal: Increase provider and consumer knowledge about fetal alcohol syndrome through coordinated efforts of the Division of Alcoholism and Drug Abuse (ADA), the Division of Mental Retardation/Developmental Disabilities, and the Division of Health.

Recommended Action: Continued funding support for the Fetal Alcohol Syndrome program through funding for regional council staff to conduct workshops.

Goal: Reduction of the prevalence of mental retardation through a program of public education for primary prevention of perinatal morbidity and mortality. (This would include the effects of nutrition, prenatal care, maternal age, smoking, alcohol and other drugs.)

Recommended Action: 1) Assist the Division of Health in developing a program of public education. 2) Increase communication and information sharing between the Division of Health and the Division of Mental Retardation/Developmental Disabilities.

Goal: The Department of Mental Health should continue using the following general priorities for future integrated health systems planning:

1. promotion of community based mental health programs;
2. preventive mental health services;
3. services to special "target" populations (e.g., women, youth, elderly, social minorities); and
4. deinstitutionalization with sensitivity (appropriate support systems must be established).

Goal: The Division of Comprehensive Psychiatric Services should increase their treatment capability for high risk populations and populations in areas of unmet need by assuring availability and accessibility to referral and treatment services.

Recommended Action: The Division of Comprehensive Psychiatric Services should be supported in fulfilling the need for expansion of community mental health services into all areas of Missouri presently lacking such services.

Goal: The Department of Mental Health, in cooperation with other appropriate state agencies, should eliminate any inappropriate institutionalization and should ensure the availability of appropriate sites for its Community Placement program.

Recommended Action: The Division of Comprehensive Psychiatric Services and the Division of Mental Retardation/Developmental Disabilities should upgrade the quality of community placement sites by eliminating all placements in facilities not meeting Division of Health approved standards in the categories of patient care, nutrition, sanitation, and life-fire safety codes.

Goal: Increase the awareness of the role and scope of chemical substance abuse and the importance of personal decisions relating to that used in society should be increased among primary and secondary school age youth through integration of substance abuse education into the school health curriculum.

Recommended Action 1: In-service education should be established by the Division of Alcoholism and Drug Abuse in cooperation with the Department of Education to help keep educators and administrators at all levels of the community education system fully informed of all aspects of substance abuse.

Recommended Action 2: Educators and administrators at all levels of the community education system should periodically meet with their local law enforcement authorities to gain an understanding of each other's responsibilities, problems, and limitations related to substance abuse and to promote mutual respect for cooperative activity.

Goal: The Department of Mental Health should continue to increase the accessibility, quality, and number of treatment facilities and educational programs for the aged with substance abuse problems.

Recommended Action 1: The Division of ADA should continue to provide leadership in documenting the extent of both intentional and unintentional overmedication of the aged in Missouri.

Recommended Action 2: Present substance abuse treatment programs should be re-evaluated by the Division of ADA to determine their efficacy relative to the aged.

Recommended Action 3: The Division of ADA should expand their educational programs directed at the aged with substance misuse problems. These programs should be carried out through the mass media, primarily television and radio.

Goal: The Division of Alcoholism and Drug Abuse and the state's health agencies should continue development of goals aimed at increasing the availability and accessibility of substance abuse prevention and treatment services to underserved populations in Missouri.

Goal: The Division of Mental Retardation/Developmental Disabilities should continue to consider the following four areas of concern in planning for MR/DD health services:

1. Public and private MR/DD resources at the community level should coordinate programs with appropriate segments of the health care system included in Public Law 93-641 (The National Health Planning and Resources Development Act of 1974).

2. Mental retardation could be prevented or seriously reduced in prevalence (e.g., fetal-alcohol syndrome) through preventive activities and a comprehensive health care delivery system.

3. The program placing MR/DD patients in community facilities (community placement programs) should be monitored in order to upgrade the quality of the evaluation and treatment of placements.

4. Cooperation between regional MR/DD councils and health systems agencies and between the state MR/DD council and the SHCC is not mandated. However, cooperative efforts for mental health services and prevent potential overlap in many areas of service and in review and approval activities.

Goal: The Missouri legislature should establish the legal basis for alternative financing for mental health care.

Recommended Action 1: Private health insurance coverage should be increased to cover mental health problems on a comparable basis with other health care.

Recommended Action 2: Medicaid reimbursement should be increased for mental health care.

Notes

¹ E. James Lieberman, ed., Mental Health: The Public Health Challenge (Washington: American Public Health Association, 1975), p. 12.

² O. English and G. Pearson, Emotional Problems of Living (New York: American Public Health Association, 1963).

³ Lieberman, p. 15.

⁴ Lieberman, p. 36.

⁵ The President's Commission on Mental Health, Report to the President, Vol. I (Washington: GPO, 1978), p. 8.

⁶ Lieberman, p. 243.

⁷ Commission on Mental Health, op. cit., pp. 9-10.

⁸ Robert N. Butler, Why Survive, Being Old in America (New York: Harper and Row, 1975). For further discussion see the following: Zachary I. Hanan, "Geriatric Medications: How the Aged are Hurt by Drugs Meant to Help," RN, Vol. 41, January, 1978, pp. 57-61; Mary Adelaide Mendelson, Tender Loving Greed (New York: Vingate Books, 1975).

⁹ Mendelson, p. 18.

¹⁰ Mental Illness as defined in Missouri Law is ". . . a state of impaired mental function and includes alcoholism and other drug abuse to such extent that a person so affected requires care and treatment for his own welfare, or the welfare of others, and without regard to whether or not such a person has been adjudicated legally competent"

¹¹ Alcohol, Drug Abuse, and Mental Health Administration, Forward Plan for Fiscal Years 1979-1983 (Washington: GPO, 1977).

¹² Ibid., Summary.

¹³ Missouri Department of Mental Health, Consolidated Plan, Fiscal Years 1981-1983 (Jefferson City: The Department, 1980), p. 2.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Missouri Department of Elementary and Secondary Education, A Guide for Developing a Comprehensive K-12 School Health Education Program (Jefferson City: The Department, 1975). See also Region VII Center for Health Planning, Starting a Comprehensive School Health Education Program (Jefferson City: State Health Planning and Development Agency, n.d.).

17 Ibid., p. 52.

18 Ibid., p. 53.

19 Ibid., p. 53.

MAINTENANCE SERVICES

"Services provided to individuals to preserve an existing functional level as well as assist them in daily living activities."

MAINTENANCE

The maintenance section of the plan addressess In-Home Health Services and Day Care. The discussion focuses on services which allow the recipient to avoid institutional services.

Previous editions of the Missouri State Health Plan have contained discussions on hospital-based long-term care and nursing home care services. The long-term care delivery system is examined in depth in the Medical Facilities Appendix.

A. CLINICAL

In this section, the focus will be on the availability of in-home nursing care and day care. (In-home therapy services are discussed in Chapter III under Habilitation/Rehabilitation Services.)

A. In-Home Health Services

Desired System

Availability

In Missouri, there should be in-home health services available in each county. Assessment teams should also be available by county to determine what package of health or support services is needed and to make arrangements for the impaired indigent elderly in particular who are at high risk of institutionalization. These service packages might include: homemaker/home health aid services, nutrition services, and transportation as well as skilled nursing and home therapy services. In any given area, even if all these services are available, they are usually administered by different agencies. Information and referral to services is available through Area Agencies on Aging, but presently no agency assures the delivery of an appropriate level of care to each client through a comprehensive health and social needs assessment process. A designated professional would follow-up on the client in a case-manager role.

Accessibility

Reimbursement barriers should be lifted in order to promote the use of home health services.

Acceptability

Family education and support services should be developed in Missouri since families are the major source of care for the infirmed elderly. The education program could teach family members basic care skills and provide assistance as needed. There are very few programs similar to this currently available. The development of networks of "back-up" services to provide support to families caring for aged relatives would be an important aid in promoting appropriate home care. An important support service would include the provision of advice and assistance in case of an emergency; ideally on a 24-hour basis. It is tremendously reassuring to families caring for infirmed relatives to know that, in a crisis, help is available.¹ Arrangements for respite care could also be made through this service.

Physician and hospital acceptance of home health services can be promoted by enhancing the knowledge of these two sectors in relation to the appropriate use of home health care. Fundamental issues in home care that hospitals and physicians should be aware of are: a) how home health services can be obtained for the patient; b) the sophistication of the care that can be provided by these services; c) the categories of patients who can best be served in the home setting; and d) methods of reimbursement.

Quality

Licensing is needed as a means of helping to protect consumers against inadequate quality home health services.

Cost

Home health agencies should be included under Certificate of Need legislation. The National Association of Home Health Agencies supports the inclusion of home health under Certificate of Need legislation and in the planning process as a means of deterring "undue proliferation of agencies in some areas while helping to promote the extension of home health to unserved areas. Licensure without . . . Certificate of Need legislation could cause proliferation of unneeded agencies and duplication of services."²

In a more general term, it is also desirable that the promotion of in-home services be continually emphasized. Their appropriate use should prevent undue institutionalization at greater cost. A recent GAO report has shown home health services to be less costly than institutionalization for patients who are not greatly impaired.

Closer attention should be given to the appropriate utilization of both home health personnel and home health visits. The use of home health aides for the performance of tasks which do not require the skills of a professional nurse should be emphasized. Quality and adequate care must be safeguarded; however, close scrutiny should be maintained in order to ensure that the care delivered is not more intensive than the patient's condition would warrant. As physicians and home health agencies develop and administer each patient's "plan of care," the appropriate intensity of services should be carefully addressed.

Continuity

See discussion of case management under Availability.

Comparative AnalysisAvailability

Map A-M-1 in the appendix under Maintenance Services indicates certified home health care service availability in the State. A discussion of in-home therapy services is found in Chapter III, Habilitation/Rehabilitation. At present, of the 114 counties in Missouri:

- all counties have Medicare/Medicaid certified skilled home nursing care;
- two counties have no certified home health aid services;
- seventy-seven counties have no certified medical social services.

The map also reveals the availability of Division of Family Services adult caseworkers. Sixty-nine counties have neither an adult caseworker from the State Division of Family Services nor medical social services from a certified home health agency. It is worth noting that when comparisons are made with the availability reported in last year's State Health Plan, Missouri's home health coverage has improved. While it had been reported that there were eight counties with no home health services at all last year, there are no counties, at present, without at least nursing services and additional services.

Programs of case management for the infirmed home patient care are not in operation in Missouri. In Kansas City a program has been proposed which would demonstrate a case management system through a health care facility. It would provide assessment, service planning, services delivery, follow-up, and community development.³

A model home health services program entitled, "Nursing Home Without Walls Program" was authorized by the New York legislature in 1977. Under this program, payment of 75 percent of the average monthly skilled nursing facility or intermediate care facility rate is provided for each client who is determined needing skilled or intermediate care. This provides for the allocation of home services to meet client needs. Providers may be certified home health agencies, public, voluntary, or non-profit residential care facilities or other health care facilities. Services may be provided directly or by contract with other agencies. There must be physician approval of the plan of care and the local Department of Social Services (equivalent to the Missouri Division of Family Services) does the case-management in cooperation with the long-term care providers. With some modification to improve its feasibility in Missouri, such a program could warrant experimentation in the form of demonstration projects.⁴

Accessibility

Currently, the Blue Cross Plans in Missouri and other insurance companies are providing reimbursement for home health services. Information on the coverage of home health by all insurance companies is not available. Impact on accessibility can be made by improving the reimbursement under the Medicaid program. Home services are more accessible for the Medicaid patient who is covered by Medicare because Medicare provides a broader range of services for a greater number of visits than Medicaid. For the Medicaid patient who is under 65 and needs home services, reimbursement limitations might result in placement at greater cost in an institution covered by Medicaid reimbursement. Under Medicare Part A, 100 visits are allowed within one year following hospitalization; Part B allows for an additional 100 visits regardless of hospitalization within a calendar year after a \$60 deductible is paid. Under Medicaid, home health nursing visits are limited to 24 visits within a ninety-day period. Since it is most likely that the more intensive care will be during the first ninety days following a disability or infirmity, it follows that although some patients may not approach 100 visits within a year, they may need more than 24 visits within the first ninety days. Reimbursement policy is a definite barrier to the utilization of home health care and tends to promote the use of institutional care.

Acceptability

As stated earlier, although education programs for those caring for aged relatives are beginning to emerge, there really are no "back-up" services available for families caring for aged relatives. The closest existing example in other States of what would be desirable are the back-up services associated with hospice programs which include home programs for terminally ill patients.⁵ Staff (or volunteers) would be needed to answer the telephone, and contracts could be made for nursing services to be on call for night emergencies.

Quality

In Missouri, there are no minimum standards that all providers of home health care must meet in spite of the fact that home health agencies provide such services as: removing stitches, changing dressings, drawing blood, starting IV's, and irrigating catheters. Most non-profit home health agencies, as a result of participating in Medicare, must conform to Federal standards. Member agencies in the Blue Cross Programs must also meet certain standards. However, there are no statewide standards that all agencies must meet regardless of their participation in Medicare or Blue Cross. Licensure would help improve quality control and promote more adequate monitoring of the care home health agencies are providing.

Cost

Documentation of the cost-effectiveness of home health care in Missouri is becoming available. A fairly extensive study indicating a "long-standing need" in the area of in-home services was conducted in rural mid-Missouri. Data was gathered from interviews with the relatives of clients or persons close to clients of a newly established home health service. The study concluded that "more than 80 percent of the persons receiving home care services were in need of this type of assistance for some time before the service began." If the home service had not been available, 15 percent of the clients reported that their "entry into a nursing home would have been inevitable. . . ." The finding further indicated that the services did: "1) prevent premature entry into a nursing home for a certain sub-group of the elderly; 2) avoid unsafe, unhealthy living situations for others; and 3) supplement family care where relatives continue to give care and assistance."⁶

The Missouri Council for Homemaker Services conducted a survey of all Missouri hospital social services departments in November, 1978. Thirty-four hospitals responded with twenty-four hospitals completing the entire questionnaire. From among the respondents, 130,820 discharges were represented. Of these, according to these hospitals, 3,769 patients were placed in nursing homes through State reimbursement. According to the judgment of these hospital staffs, approximately 1,134 of the patients could have gone home had there been "up to 20 hours of homemaker services each week (used with or without home health visits)" available to them.⁷

Continuity

See discussion of case management under Availability.

Problem Description

The issue of need in the area of home health is often more complex than whether each county is in the service area of a home health agency. At issue is whether or not the existing agency has the capacity to fully serve all the area with the necessary complement of services. If determination of need is based on sound criteria, there is less of a political issue when an agency attempts to establish additional services within the turf of existing agencies, or when an agency wants to establish services which are not needed by the community. Methodology development is presently going on in our State and elsewhere and the "state of the art" is gradually becoming more advanced. Current information on need determination has been published by the National League for Nursing. The League has listed the following as basic and essential

services for a home health agency: home health nursing, nutrition, occupational and physical therapy, speech pathology services, and social work. The league offers the following guidelines for data needed to develop criteria:

Population Characteristics - for both community and catchment areas (each of the following should be related to known morbidity rates):

- Age
- Income level
- Ethnicity (including language)
- Usual living arrangements
- Education
- General survey of industry in area
- Employment status and reasons (e.g., temporary industry layoff)
- Infant mortality
- Resources for reimbursement

Provider Profiles

Institutional health facilities (hospitals, skilled nursing facilities, intermediate care facilities, domiciliary, and boarding homes) for both community and catchment areas.

- Number of beds by type of service (e.g., medical-surgical)
- Number of admissions
- Number of discharges
- Services being provided

Non-institutional health facilities (e.g., HMOs, home health agencies, rehabilitation centers, etc.) - for both community and catchment areas.

- Services being provided
- Composition of caseload being served

Other Providers - For both community and catchment area.

- Number of physicians by applicable specialty
- Number of surgeons by specialty
- Number of other appropriate providers (e.g., therapists, dietitians, dentists)

Client Assessment

- Levels of care provided in community
- Ratio of visits per patient by discipline
- Ratio of visits per patient diagnosis
- Outcome measures

The criteria must speak to: the numbers of patients to be served with and without prior hospitalization; projections of the population mix five years hence; projections of the impact of new health care providers

and/or facilities (surgicenters, HMOs, etc.) five years hence; the provision of service to rural areas and/or to traditionally underserved population segments; and an evaluation to determine when need should be met by an additional agency.⁸

There is great need for development of social work services for the aged to assist in placement at the appropriate level of care, whether at home with the assistance of an appropriate package of services or in a Medicaid nursing home bed. However, reimbursement is often complicated, and "plugging-in" to the right services is often difficult when the consumer is obstructed from receiving services by long waiting lists. Inappropriate placements may be made that place patients in too high a level of care or where they do not receive needed services.

Accessibility

As previously stated, Medicaid reimburses for up to 24 home health visits per 90 day period. It is recommended that this coverage be changed to 100 visits per year with no quarterly distribution, comparable to Medicare. Technically, this would mean the addition of only four visits per year under the scope of services; however, to the clientele, it would mean the availability of more visits when most needed.

A second issue is accessibility to the physician's office which is a serious problem for many home care patients. For these patients, travel to the physician's office for periodic diagnostic and/or treatment services is hampered by their impairment. Many home care patients are essentially homebound; in fact, this is the basis for the eligibility requirement for Medicare reimbursement of home health services. In many cases, office visits require the assistance of family members to escort (perhaps carry) the patient to the physician's office. On the other hand, most physicians do not make house calls and believe that it is best for a patient to receive services at the office where the medical apparatus is available to provide the most thorough care. Furthermore, the travel involved would, in many instances, place severe constraints on a physician's time. Such factors make this dilemma difficult to resolve for the impaired home bound patient. However, for the patient who must do without such care because accessibility is too much of a barrier, a means of home delivery of such care must be found.

One possible solution is to define a broader role for the nurse clinician (nurse practitioner) beyond that currently assigned to the visiting nurse so that this practitioner can serve as an extension of the physician and meet health care needs in the patient's home beyond what the visiting nurse can presently meet. This is an area which will require more attention in future editions of the State Health Plan. The issue of reimbursement for the nurse clinician also must be raised; at present, there is no mechanism for reimbursement for the delivery of this level of skill in a patient's home.

Quality/Cost

The enactment of a home health licensure law would allow proprietary home health agencies to be reimbursed through Medicare and Medicaid. Along with licensure, the inclusion of home health agencies under Certificate of Need legislation is necessary to allow for the planned growth of services.

Continuity

See under Availability for a discussion of case management.

Goals, Objectives, and Actions

GOAL: TO PROMOTE THE APPROPRIATE USE OF IN-HOME SERVICES BY IMPROVING THE AVAILABILITY, ACCESSIBILITY, AND QUALITY OF THESE SERVICES, AND TO ASSIST CONSUMERS IN OBTAINING THE APPROPRIATE PACKAGE OF SERVICES NEEDED TO MAINTAIN THEIR INDEPENDENCE.

OBJECTIVE 1: By 1983, all counties in Missouri shall be served by a certified home health agency for home health aide visits.

OBJECTIVE 2: By 1980, a methodology for determining long-term care need as it pertains to home health care will be developed and included in the State Health Plan.

OBJECTIVE 3: By 1982, social work services in rural Missouri should be available within a 45 minute driving time.

Recommended Action 1: The Division of Family Services should obtain funding for more adult caseworkers so that a minimum of 25 percent more counties can be served.

Recommended Action 2: By 1982, a rural and an urban demonstration project should be undertaken in Missouri which would provide model case management services for in-home long-term care patients.

OBJECTIVE 4: By 1982, the number of home health visits under Medicaid should be consistent with the number of visits under Medicare, Part B but not less than 100 visits per year.

OBJECTIVE 5: By 1981, voluntary and/or religious organizations, teaching institutions home health agencies, health care institutions, and the Missouri Office of Aging should consider offering educational programs and other supporting services to families caring for infirmed aged relatives.

OBJECTIVE 6: By 1980, Certificate of Need legislation which includes home health services under its regulation and a licensure law should be enacted to regulate home health agencies.

Desired System

Availability

Day care for adults has developed into a generic term for a program of care which is less comprehensive than the care in nursing homes. It is also considered to be ideal for the home patient who may use this as the basis of his/her basic health service package. This approach may be particularly appropriate for the patient who needs a multiplicity of health and social services and who would also have a need for social interaction.

Two major models of day care have merged as a result of the projects to date. One model offers custodial care with a more psycho-social orientation. Although this model is primarily psycho-social in nature, the clientele are usually suffering from such serious impairments that it is not in their best interests to be left alone all day. The other model emphasizes medical care and it provides therapeutic services for more highly impaired individuals. Both types of day care should be available in Missouri in order to provide for consumer choice.

Accessibility

For the implementation of these models, flexible, multi-phasic financing is needed. Ideally, Title III of the Older Americans Act monies could provide developmental funds, with Title XX of the Social Security Act monies used more appropriately for psycho-social models, and with Title XIX (Medicaid) reimbursement for use within the medical models. Title VII of the Older Americans Act monies could provide meals. Furthermore, any day care project must be accompanied by transportation arrangements for the clients. Transportation and reimbursement represent the greatest barriers to the utilization of day care services.

Cost

The implementation of day care services requires careful planning to ensure that costs and barriers to accessibility do not discourage consumer use.

Quality*

Acceptability*

Continuity*

Comparative Analysis

Availability

Two projects are presently in various stages of development in St. Louis. They are to be financially assisted with local government funds. Such stable funding increases the likelihood of their success. In addition, nursing homes in the State offer day care services. It would be desirable to have a demonstration project in a rural area of Missouri.

Accessibility

There is nothing of a statutory nature nor anything in the Federal Regulations that prohibit the use of Title XIX monies for day care reimbursement. The use of Title XIX money for day care has, in the past been a debated topic but a "Federal interpretation of outpatient hospital services to include medical day care" was released on January 22, 1976 with the intention of encouraging "alternatives to more costly long-term institutional care."⁹ However, in Missouri's Medicaid Program, day care is not a covered service. Limited Title XX reimbursement for day care for adults is being made however. Day care is defined in Title XX's 1978-1979 plan as follows:

The purpose of day care for adults is to provide care on a regularly scheduled basis to relieve the caretaker-relative of the responsibility for supervision of the individual or to allow the caretaker-relative to pursue employment or training. Day care for adults is the provision of care, supervision, and structural activities for adults 18 years or older in a protected group setting for a portion of a 24 hour day. Basic activities include personal supervision, meals provision, personal care, ensuring social interaction and providing mobility assistance, as needed. In addition, adult day care also may include the administration of medication and the provision of organized social, recreational, developmental, and/or educational activities.¹⁰

At present, these Title XX monies are used to reimburse day care for mental health patients. However, nothing in the definition precludes its use for a psycho-social day care model for geriatrics. When a therapy based model is used, Medicare will reimburse for the therapy services.

Cost

Future editions of the State Health Plan will analyze the cost effectiveness of services provided by day care in comparison to home health and nursing home care. The lack of cost information hinders the determination of the relative cost effectiveness of the delivery system for clients with similar impairments.

Quality*

Acceptability*

Continuity*

Problem Description

Availability

Barriers to reimbursement, the need for coordinated transportation services, consumer unfamiliarity, and service availability are key issues in day care. Overall, experiments with this type of care have lacked support due to inadequate funding.

Accessibility

If the day care setting is to be successful, barriers to reimbursement must be lifted. Reimbursement waivers might be sought for certain projects for the purpose of experimentation and for more experience with the day care system. Based upon that experience, reimbursement might be made permanent in the future for projects with the appropriate qualifications.

Cost

As stated in Accessibility, future editions of the State Health Plan will present cost-comparative information.

Quality*

Acceptability*

Continuity*

Goals, Objectives, and Actions

GOAL: BY 1984, THE NUMBER OF DAY CARE PROJECTS SHOULD BE INCREASED. DATA SHOULD ALSO BE COMPILED AND EVALUATED IN ORDER TO DETERMINE SERVICE COST EFFECTIVENESS.

OBJECTIVE 1: By 1983, three additional experimental day care centers for the aged should be developed in Missouri.

The three projects should be varied in locality, in setting, and in services. They should provide basic services such as nursing, recreation, at least one therapy program, social services, and dietary services.

It is also recommended that these projects include data collection and evaluation mechanisms developed to assess the structure, financing, and patient care outcomes.

ENDNOTES

¹Carol Schlef, "Report to the Department of Health, Education, and Welfare on Research to Alternatives to Nursing Homes," (Jefferson City, 1978), p. 6 presented to the Senate State Health Care Committee.

²John Byrne, "Summary of National Association of Home Health Agencies' Position on Certificate of Need," statement presented to the Missouri Senate Sub-Committee on Public Health, Welfare, Consumer Protection, and the Environment (Jefferson City, October, 1977).

³Schlef, p. 3.

⁴Schlef, p. 4.

⁵Schlef, p. 6.

⁶William Hefferman, Susan Elder, and Paul Lasley, "An Evaluation and Documentation of the Strategies Employed to Become an Established and Self-Sufficient Agency to Serve the Needs of the Elderly in Osage Cole, Moniteau, and Cooper Counties" (n.p.: Central Missouri Area Agency on Aging, July 1, 1976), p. 26.

⁷Missouri Council for Homemaker Services, "Survey of Hospital Social Services Departments" (Rolla, 1978), p. 2.

⁸National League for Nursing, "Proposed Model for the Delivery of Home Health Services," Publication No. 21-1550 (New York, 1974), p. 2.

⁹Greater St. Louis Health Systems Agency, "Illinois and Missouri Medicaid Programs - An Analysis," provisional draft (St. Louis, 1978), p. 49.

¹⁰Missouri Division of Family Services, "Final Comprehensive Annual Social Services Program Plan, Program Year July 1, 1978 to June 30, 1979" (Jefferson City, 1978), p. 33.

B. NON-CLINICAL

DAY CARE



Desired SystemAvailability

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Two major models of day care have merged as a result of the projects to date. One model offers custodial care with a more psycho-social orientation. Although this model is primarily psycho-social in nature, the clientele are usually suffering from such serious impairments that it is not in their best interests to be left alone all day. The other model emphasizes medical care and it provides therapeutic services for more highly impaired individuals. Both types of day care should be available in Missouri in order to provide for consumer choice.

Accessibility

For the implementation of these models, flexible, multi-phasic financing is needed. Ideally, Title III of the Older Americans Act monies could provide developmental funds, with Title XX of the Social Security Act monies used more appropriately for psycho-social models, and with Title XIX (Medicaid) reimbursement for use within the medical models. Title VII of the Older Americans Act monies could provide meals. Furthermore, any day care project must be accompanied by transportation arrangements for the clients. Transportation and reimbursement represent the greatest barriers to the utilization of day care services.

Cost

The implementation of day care services requires careful planning to ensure that costs and barriers to accessibility do not discourage consumer use.

Quality*Acceptability*Continuity*

Comparative Analysis

Availability

Two projects are presently in various stages of development in St. Louis. They are to be financially assisted with local government funds. Such stable funding increases the likelihood of their success. In addition, nursing homes in the State offer day care services. It would be desirable to have a demonstration project in a rural area of Missouri.

Accessibility

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At present, these Title XX monies are used to reimburse day care for mental health patients. However, nothing in the definition precludes its use for a psycho-social day care model for geriatrics. When a therapy based model is used, Medicare will reimburse for the therapy services.

Cost

Future editions of the State Health Plan will analyze the cost effectiveness of services provided by day care in comparison to home health and nursing home care. The lack of cost information hinders the determination of the relative cost effectiveness of the delivery system for clients with similar impairments.

Quality*

Acceptability*

Continuity*

Problem Description

Availability

Barriers to reimbursement, the need for coordinated transportation services, consumer unfamiliarity, and service availability are key issues in day care. Overall, experiments with this type of care have lacked support due to inadequate funding.

Accessibility

If the day care setting is to be successful, barriers to reimbursement must be lifted. Reimbursement waivers might be sought for certain projects for the purpose of experimentation and for more experience with the day care system. Based upon that experience, reimbursement might be made permanent in the future for projects with the appropriate qualifications.

Cost

As stated in Accessibility, future editions of the State Health Plan will present cost-comparative information.

Quality*

Acceptability*

Continuity*

Goals, Objectives, and Actions

GOAL: BY 1984, THE NUMBER OF DAY CARE PROJECTS SHOULD BE INCREASED. DATA SHOULD ALSO BE COMPILED AND EVALUATED IN ORDER TO DETERMINE SERVICE COST EFFECTIVENESS.

OBJECTIVE 1: By 1983, three additional experimental day care centers for the aged should be developed in Missouri.

The three projects should be varied in locality, in setting, and in services. They should provide basic services such as nursing, recreation, at least one therapy program, social services, and dietary services.

It is also recommended that these projects include data collection and evaluation mechanisms developed to assess the structure, financing, and patient care outcomes.

ENDNOTES

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⁴Schlef, p. 4.

⁵Schlef, p. 6.

⁶William Hefferman, Susan Elder, and Paul Lasley, "An Evaluation and Documentation of the Strategies Employed to Become an Established and Self-Sufficient Agency to Serve the Needs of the Elderly in Osage Cole, Moniteau, and Cooper Counties" (n.p.: Central Missouri Area Agency on Aging, July 1, 1976), p. 26.

⁷Missouri Council for Homemaker Services, "Survey of Hospital Social Services Departments" (Rolla, 1978), p. 2.

⁸National League for Nursing, "Proposed Model for the Delivery of Home Health Services," Publication No. 21-1550 (New York, 1974), p. 2.

⁹Allan Chase, The Biological Imperatives: Health, Politics, and Human Survival (New York: Hold, Rinehart, and Winston, 1971), p. 125.

¹⁰Missouri State Center of Health Statistics, unpublished data (1978), p. 1.

¹¹Missouri Senate, "Report of the State Health Care Committee on Nursing and Boarding Home Licensing in Missouri" (Jefferson City, 1978), p. 1.

¹²Ibid., p. 19.

¹³Ibid., p. 21.

¹⁴Greater St. Louis Health Systems Agency, "Illinois and Missouri Medicaid Programs - An Analysis," provisional draft (St. Louis, 1978), p. 49.

¹⁵Missouri Division of Family Services, "Final Comprehensive Annual Social Services Program Plan, Program Year July 1, 1978 to June 30, 1979" (Jefferson City, 1978), p. 33.



REHABILITATION AND HABILITATION

"Services to restore or improve the functioning capability of individuals. These include physical, medical, psychological, social, vocational, educational, housing, and economic services."

It is important to define what is meant by the terms "habilitation" and "rehabilitation". For the purpose of this State Health Plan, the following definitions will apply:

Habilitation: "The process of taking an individual to as high a functional degree as he/she is capable of attaining."

Rehabilitation: "The process of returning an individual to as high a functional degree as possible following the onset of a disabling illness/injury."¹



Introduction

There are a variety of patients who benefit from physical medicine and rehabilitation care. In terms of broad categories of patients who need restorative care, there are those patients who need it because of an organic disorder, a surgical procedure, or an accident, which resulted in a loss of or permanent damage to, organs, limbs, or body systems. These afflictions range from cleft palate to paraplegia or handicapping strokes with the latter patients requiring long term restorative care.

The convalescent care of these people is characterized by the fact that much of it has to be devoted to the process of psychologically, physically, and occupationally rehabilitating them to the point where they can make the most efficient use of their now permanently reduced physical resources.²

Physical medicine and Rehabilitation Care can be provided in a variety of settings; conventional hospitals, rehabilitation inpatient facilities, nursing homes, and the patients' homes. This discussion will focus on hospitals and rehabilitation facilities where the most intensive restorative care is provided. The discussion of therapy services at the end of this section will focus primarily on services in nursing homes and patients' homes.

Desired System

Availability

For the types of patients described above, rehabilitation services should be available without undue hardship. There should be sufficient manpower at the treatment site to form a rehabilitation team (physician with appropriate expertise, therapists, rehabilitation counselors, and nurse specialists) who could deliver the package of services to satisfy the patient needs.

Accessibility

The source and adequacy of financial reimbursement for rehabilitation care varies from patient to patient. It is desired that each patient should be able to be rehabilitated to his/her optimum functioning level and that financial accessibility should not be an obstacle to the receipt of needed services. In addition to financial accessibility, it is desirable that clients have easy physical access to buildings where health care is provided.

Acceptability

Patients and their families need both education and counseling to make necessary adjustments in lifestyle and to become proficient at the necessary rehabilitative health care skills.

Quality

The 1978 Joint Commission on Accreditation of Hospitals (JCAH) has an expanded section on Criteria and Standards for Rehabilitation Programs and Services. It is desirable that hospital rehabilitation units follow these guidelines where feasible.

Cost

Proportionally fewer health care dollars are spent on prevention and rehabilitation services than on other types of medical care.³ One possible method of better utilizing available rehabilitative care monies is the use of rehabilitation treatment in day hospital programs. This setting can provide programs of active rehabilitation by offering the full range of therapeutic and ancillary (X-rays, pharmacy, clinical laboratory) services within the parent hospital while reducing costs.⁴

Taking this concept one step further, Dr. Leonard Policoff, in his Presidential address to the American Congress of Rehabilitation Medicine in 1972, offered the following insight into future cost-effective directions in this field.

The realities of limited fiscal resources, will, for the next decade or so, require the emphasis to be on the development of day-care programs, home care programs, and out-patient care programs, with flexible delivery hours and days to meet the consumer needs. There will be a concomitant deemphasis on inpatient care except for the most severely disabled, and reallocation of available space away from bed . . . to multi-use daytime treatment space.⁵

Continuity

Continuity of care was described briefly under Availability. Many patients will require a rehabilitation team of specialists. These individuals should function well together with a high degree of coordination.

Comparative AnalysisAvailability

The Division of Health, Bureau of Hospital Licensure and Certification's Survey of Hospitals reports that the following number of physical medicine and rehabilitation beds are within so-designated hospital nursing units in non-Federal facilities:

HSA I	-	54 beds
HSA II	-	106 beds
HSA III	-	271 beds
HSA IV	-	106 beds
HSA V	-	46 beds

It should be noted that in hospitals without distinct physical medicine/rehabilitation units patients are often placed in medical/surgical beds where they may receive comparable rehabilitation services. Consequently, the identification of "designated rehabilitation units" as a measure of the availability of hospital-based restorative care is not all-inclusive.

Occupancy rates in designated rehabilitation units in the State range from approximately 12 percent to 90 percent. Although the average length of stay will vary with the intensity of services offered and the patient mix within units, the average length of stay in Missouri ranges from 7.7 days to 34.2 days. The overall adequacy in numbers of inpatient beds will not be addressed in this edition of the State Health Plan. However, despite the desirability of delivery settings (previously discussed under Cost) it should be mentioned here that of the thirteen distinct physical medicine/rehabilitation units across the State, only seven of these units have outpatient rehabilitation services.

In the area of manpower availability, a 1970 Bulletin published by the Commission of Rehabilitation Medicine recommends that there should be one physiatrist (or M.D. with a specialization in physical medicine) per 100,000 population.⁶ Based upon the 1977 estimated population there should be 48 such doctors in Missouri. There are currently 32 M.D.'s practicing in Missouri with a speciality in Physical Medicine and Rehabilitation and the following distribution:

HSA I (Missouri Only)	- 6
HSA II	- 12
HSA III (Missouri only)	- 11
HSA IV	- 3
HSA V	- 0

Accessibility

Among the funding sources utilized by rehabilitation patients are: Medicare, Medicaid, Veteran's Administration Programs, Civilian Health and Medical Program of the Uniformed Services, Crippled Children's Services, Vocational Rehabilitation, Workman's Compensation, and private health insurance. Coverage is sometimes limited by non-inclusion of certain services or appliances, by length of stay, or by the requirement of the existence of the disability for a certain length of time. Some insurance policies simply do not include rehabilitation services or will pay for only a portion of total rehabilitation services.⁷

Data on the extent to which architectural barriers limit patient accessibility is not available at this time. The situation is improving, particularly in regard to health care facilities and buildings which house programs that are Federally funded, due to recent legislation mandating access for the physically handicapped. However, accessibility to medical buildings within the private sector has not been determined.

Acceptability

No survey instrument has been developed for statewide use to determine how much counseling and education is given to the rehabilitation patient and his/her family or how sophisticated such services may be when rendered.

Quality

The extent to which physical medicine and rehabilitation units are meeting the 1978 JCAH criteria and standards has not been determined at this time. Future editions of the State Health Plan will address this issue.

Cost

A St. Louis facility is currently developing a day hospital program in the area of rehabilitation for the geriatric patient. According to their cost projections, "even after taking into consideration changes in patient volume and inflation, the cost of providing day hospital services is less than half of the cost of inpatient restorative care."⁸ Unfortunately, a major barrier to the implementation of this program is inadequate Medicare reimbursement. In order to expand appropriate outpatient rehabilitation services, it would be important to modify Medicare, Medicaid, and other third party payers to include alternative settings for these services.

On a trial basis, the expansion of services could take the form of waivers for individual pilot projects. These projects should have mechanisms for data collection and evaluation in order to assess cost-effectiveness and patient care outcomes. As documentation is developed, appropriate modifications in Medicare, Medicaid, and other third party payers should be made.

Continuity

Manpower availability for rehabilitation team staffing is an important issue due to shortages of qualified personnel, particularly physiatrists. The availability of therapists, rehabilitation counselors, and nurse specialists in rural areas also is greatly limited. The extent to which the team approach is used and how functional these teams may be in the treatment of the rehabilitation patient is unknown at this time. Information is available that all the hospitals with rehabilitation units offer physical therapy, occupational therapy and speech pathology. At a minimum, these disciplines are available to patients who have access to these facilities. The adequacy of referral patterns and counseling services which would lend continuity to a patient's care is also unknown at this time. cursory analysis suggests that it is doubtful whether all patients receive adequate case management and follow-up after discharge from facilities.

Problem Description

Availability

The need for physiatrists is the most clearly documented need at this writing. Future editions of the State Health Plan will utilize data from Health Systems Plans and other inputs including appropriateness review to examine the regional adequacy of rehabilitation units.

Accessibility

Barriers to the receipt of needed rehabilitation must be lifted. As discussed under Cost, there are defined barriers for reimbursement of services provided in alternative settings. This problem is a lingering one even though it is evident that the receipt of care in alternative settings promotes a more productive population. An appropriate use of consumer-oriented outpatient rehabilitation cases less disruption to people's jobs and home lives in addition to a more efficient use of health care dollars.

Although new construction of health facilities tends to be more "barrier-free", the feasibility of altering architectural access barriers in established facilities is limited. Until a generation of older inaccessible buildings are replaced, the resolution of the problem may lie in home visitations or other types of special arrangements.

Acceptability

Education programs for families who care for infirmed relatives has been discussed under Maintenance Services. Linkages might be developed between these programs and programs for families of disabled persons. Indeed, there are a large number of patients whose needs overlap both rehabilitation and maintenance services. For the rehabilitation patient, education should take place primarily within the setting of the rehabilitation unit. However, many of the general care skills would be the same for both the rehabilitation patient (often disabled), and the patient needing long-term maintenance care. In addition, the families of both types of patients would normally need similar services.

Quality

As stated previously, distinct hospital-based rehabilitation units should attempt to conform with JCAH standards. The current level of conformance of these units is not known.

Cost

The development of more consumer oriented alternatives to inpatient rehabilitation services will require multi-faceted strategies. A first step (taking into account present reimbursement barriers) would be to have hospitals with distinct rehabilitation units begin to explore the most feasible outpatient program of restorative care which they could offer, in addition to their inpatient rehabilitation. Most facilities should be able to determine which third party payors are most commonly utilized by their rehabilitation patients and what the reimbursement restrictions are for these payors. The results might range from limited outpatient therapy to a pilot day hospital program operated under a Medicare waiver. Lifting of reimbursement barriers has the greatest chance of success where cost-effectiveness of the alternative setting or program has been documented.

Continuity

Increasing the amount of professional education in the comprehensive needs of the rehabilitation patients and in the dynamics of the team approach would enhance the delivery and the continuity of restorative care to the rehabilitation patient.

Goals, Objectives, and Actions

GOAL: TO ENSURE THAT ALL PATIENTS WHO NEED REHABILITATION CARE RECEIVE THE FULL RANGE OF QUALITY RESTORATIVE CARE IN THE MOST COST-EFFECTIVE SETTING CONSISTENT WITH THEIR NEEDS.

OBJECTIVE 1: To encourage the training and recruitment of Physical Medicine and Rehabilitation Services personnel.

Recommended Action 1: By 1983, at least one Physical Medicine and Rehabilitation Specialist should be placed in Health Service Area V.

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement barriers to outpatient rehabilitation services should be eliminated where it facilitates more appropriate use of rehabilitation care dollars.

OBJECTIVE 3: By 1981, hospitals with distinct Physical Medicine/Rehabilitation units should work toward meeting the Joint Commission on Accreditation of Hospitals standards for the provision of care.

OBJECTIVE 4: By 1981, medical training centers in Missouri which prepare practitioners in restorative care should adequately define the total needs of the rehabilitation patients and should ensure the preparedness of graduates to effectively deliver care within the rehabilitation team concept.

A. Residential Care

Introduction

Data on the numbers of developmentally disabled persons in Missouri, an analysis of their health status, and corresponding goals are given in Chapter II, Health Status.

The Missouri Department of Mental Health defines a developmental disability as "a disability attributable to mental retardation, cerebral palsy, epilepsy, autism (or dyslexia resulting from these), or other conditions closely related to mental retardation in terms of intellectual and adaptive problems."⁹ The program for the developmentally disabled in Missouri is funded by the Developmentally Disabled Assistance and Bill of Rights Act (P.L. 94-103). Services in Missouri which are supported through formula grants under this act include: diagnosis, evaluation, treatment, personal care, day care, domiciliary care, special living arrangements, training education, sheltered employment, recreation, counseling, protective and other socio-legal services, information and referral, follow-along, and transportation.¹⁰

Desired System

Availability

The number two priority of the Department of Mental Health's Developmental Disabilities Plan is "to assist in and encourage the development, expansion, and improvement of community-based residential facilities for developmentally disabled."¹¹ (The availability of placements at differing levels of care in facilities with an appropriate patient mix is an important component of the treatment environment.)

Quality

Developmentally disabled persons should be housed in the least restrictive environments which are appropriate to their needs. Clients in placements should be well monitored and should have continued medical and social supervision. The quality of facilities also should be ensured.

Continuity

The continuity of the health care delivered to persons who have been deinstitutionalized is particularly important because the services which this population receives at the local level may be administered through a variety of public, not-for-profit and/or private programs.

Cost

The high costs of providing inpatient care has been cited as one impetus of the Department's deinstitutionalization program (the Com-

munity Placement Program). However, even at the community level, adequate funds must be available to provide adequate treatment. Counties where services are lacking should attempt to implement "S.B.40" funding. "S.B. 40" provides local support for community-based programs through a levy of up to 20 cents per \$100 assessed valuation subject to approval by county voters, for the establishment and/or maintenance of sheltered employment, group homes, or related programs.¹²

Accessibility*

Acceptability*

Comparative Analysis

Availability

In the Department of Mental Health's Developmental Disabilities Plan "Residential Facilities" are of two categories, Domiciliary and Special Living Arrangements. Domiciliary care is needed for those who require the provision of living quarters, personal care, and supervision on a 24 hour-a-day basis. Such care might be given in nursing homes, foster homes, or other residential facilities. Special living arrangements are needed for those who require some degree of supervision. These arrangements include at least counseling and leisure time activities, but residents may leave the place of residence for work, recreation, or other reasons. In addition, the residents are usually not heavily dependent upon personal care services. Some examples of this form of care are respite services for parents and supervised apartment living.¹³

The term "service gap" has been used by the Department of Mental Health to refer to numbers of persons who are determined to be in need of such services and are either not getting this care or are not getting maximum benefit from the residential care they receive because there are problems of appropriateness with the placement. These numbers do not really represent known individual cases but are service gap "indicators" or "bench marks" of estimated needs to be used in planning.¹⁴ Based on a statewide planning study, the Department of Mental Health has determined that there is a service gap of 44,641 clients for domiciliary care and a service gap of 31,104 clients for special living arrangements.

Quality

The Department of Mental Health conducts the Community Placement Program "to provide mental health treatment and services in the least restrictive environment consistent with the individual clients needs." As a result of this program, Missouri has seen a distinct shift from the institutionalization of the majority of patients in State facilities to housing these patients in private and public facilities. However, a number of issues have come to light in regard to the community placement

program. Central to all these issues is the problem of quality control. The problems of placement of clients in substandard facilities and of inadequate client management have received increased public attention.

Continuity

Case management services include counseling, protective, social, socio-legal, and following-along services which are important in the continuity of care. The availability of these services is only one component in the measure of continuity of care. As estimated in the Department of Mental Health Plan, the total statewide services gap for case-management services is 198,504 clients.¹⁵

Cost

It is estimated that the Community Placement Program has saved the State considerable amounts of money on capital improvement projects and has secured Federal funds not normally available to Missouri. State Government has been relieved of much of the financial burden of caring for the mentally ill and developmentally disabled as a result of the Federal monies.

Accessibility*

Acceptability*

Problem Description

Availability

Developmentally disabled persons of differing diagnoses have differing residential needs. Furthermore, services availability depends on whether a family can meet residential needs. For some individuals, care is beyond the capability of their families and for some adult patients, relatives may no longer be alive. There is a need for additional and more appropriate facilities.

Quality

The utilization of inappropriate and poor quality facilities by the Department of Mental Health has raised the question of whether or not effective evaluation and treatment of placements is possible. The numbers of community placements in facilities from which State authorities sought to revoke licenses in 1978 and the difficulties in relocating these patients has led to questions concerning the total "manageability" of the Community Placement Program.

Continuity

More services of a case-management nature must be purchased for the population in need. The service gap indicator points to insufficient services obtained by the majority of the estimated 252,000 developmentally disabled persons in Missouri.¹⁶

Cost

The extent of the inappropriate use of mental health dollars is a matter of conjecture. It is hoped that in the future more thorough planning and more attention to efficient management principles will help to put mental health dollars where they can meet the needs with cost effectiveness and quality.

Accessibility*

Goals, Objectives, and Actions

GOAL: TO ENSURE THE DEVELOPMENT OF A SYSTEM FOR APPROPRIATE PLACEMENT IN RESIDENTIAL FACILITIES WHERE POSITIVE BENEFIT CAN BE RECEIVED.

OBJECTIVE 1: By 1984, quality housing should be made available which meets the needs of the differing degrees of disability among the population of developmentally disabled persons in Missouri.

Recommended Action 1: By 1984, the service gap for residential care should be reduced by 10 percent.

Recommended Action 2: In areas that are underserved, local housing authorities, county governments, and the Department of Mental Health should explore avenues for providing residential care to developmentally disabled persons.

OBJECTIVE 2: By 1984, the service gap for the provision of case-management services for the developmentally disabled should be reduced by 10 percent.

B. Treatment Services

Desired System

Availability/Accessibility

Sophisticated medical treatment and general health care monitoring are often necessary in the treatment of the developmentally disabled patient. This may involve periodic medical and neuro-psychiatric evaluations with sophisticated laboratory monitoring.¹⁷ The availability of these highly technical services is presently an issue in rural Missouri. Dental care and therapy services may also be difficult to obtain for the developmentally disabled person.¹⁸

It is desirable that specialized programs of identification, referral, and care are available and accessible to the developmentally disabled population in Missouri to ensure proper care and placement. The availability of specialized dental consultation services and inpatient dental surgery should be improved. The use of innovative delivery systems (i.e., mobile units) should be explored. The provision of comprehensive care and management for the non-ambulatory patient, while particularly difficult to accomplish, should also be ensured.¹⁹

Continuity

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Quality

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Cost

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Acceptability*

Comparative Analysis

Availability/Acceptability

The Department of Mental Health Developmental Disabilities Plan states that in the provision of medical services, there is a service gap of 151,730 clients; in the provision of dental services, there is a service gap of 163,231 clients, and that in the provision of occupa-

tional therapy, physical therapy, and speech pathology and other therapy services, there is a service gap of 151,730 clients.²⁰ As discussed earlier, these service gap figures are planning estimates.

According to the Department of Mental Health Plan:

In both rural and urban areas, developmentally disabled persons and their families continue to experience difficulties in obtaining dental services. Essentially, they are able to receive little other than crises care Other treatment services (including medical services, therapies, etc.) are also needed statewide. Especially these services are needed on a regular basis for the purpose of ameliorating the extent of handicapped conditions. Specialized services are especially difficult to obtain by those living in rural areas.²¹

Continuity

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Quality

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Cost

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Acceptability*

Problem Description

Availability/Acceptability

Misdiagnosis of disability (due to a lack of specialized programs for identification of the correct mental health problem), may result in a person not receiving needed care, someone being shifted from one inappropriate program to another, or an erroneous placement in an adult psychiatric unit.²² The gravity of such misdiagnosis reinforces the need for proper medical evaluation of a person's disability and for development of a plan of care.

Continuity

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Quality

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Cost

See Chapter III, Rehabilitation/Habilitation, Residential Care.

Acceptability*

Goals, Objectives, and Actions

GOAL: BY 1984, EACH TREATMENT SERVICE GAP SHOULD BE REDUCED BY A MINIMUM OF 10 PERCENT.

OBJECTIVE 1: By 1984, special attention should be given to non-ambulatory patients in meeting the above goal.

Introduction

The focus of this section is on three types of therapies: physical therapy, occupational therapy, and speech therapy. Physical therapy is prescribed for treatment of bodily ailments through essentially physical or non-chemical means including heat, water massage, or electric current. It functions to relieve pain and/or improve muscular function.²³ Occupational therapy is prescribed for the rehabilitation of persons through the development of useful skills or hobbies in sick or handicapped individuals. This type of therapy attempts to meet the patient's need to be occupied and stimulated. It also allows them to move toward self-reliance. This type of therapy can be particularly important for those who have become disabled through rheumatoid arthritis, paralyzing cardiovascular disease, or by the loss of limbs, sight, or hearing.²⁴ Speech therapy is prescribed for the correction of speech and language disorders through the use of special techniques.²⁵ While this section deals specifically with therapy services and their availability, these services are also addressed as a part of the restorative and habilitation care systems found in the first two parts of this section. Chapter III, Maintenance Services, includes a discussion of therapy services.

Desired System

Availability

The availability of therapy services in the hospital setting will not be expanded beyond the analysis found in Part I - Physical Medicine and Rehabilitation. Based upon that analysis, it is desired that large hospital facilities should provide at least physical therapy services. The major focus of this section will be on the desirability of making these therapy services available in settings other than the hospital. Specifically, availability of physical therapy, speech therapy, and occupational therapy in nursing homes and in the patient's homes will be examined. It is desirable that patients should be able to obtain these services in nursing homes in their geographic area and from local health agencies.

Accessibility

Reimbursement barriers to the receipt of physical, occupation, or speech therapy services in a nursing home or at home should be eliminated. The Medicaid patient, in particular, should be able to receive needed therapy in the least restrictive environment which is appropriate to his/her needs.

Cost

It is not feasible for all nursing homes to staff and equip themselves to provide a full range of therapies. Under Medicaid, the certified facility must ensure that restorative care is rendered as ordered by the physician. Therefore, certified facilities either must

be equipped to provide such care or to make it available. It is desirable that they do whatever is more cost-effective and more feasible given the patient population. Facilities which care for private-pay patients should be able to provide the restorative care that is ordered for patient rehabilitation. Individual facilities are urged to examine cost-effective avenues to provide as full a range of services as feasible.

A parallel can be drawn to the home health agencies. Agencies should determine the feasibility of establishing a range of necessary services. Agencies are encouraged to examine the cost-effectiveness of contractual arrangements.

Quality

See Chapter III, Maintenance Services, Chronic Disease Care and Nursing Homes for a discussion of quality in home care and nursing home care.

Continuity*

Acceptability*

Comparative Analysis

Availability

Most of the larger hospital facilities do make physical therapy available. The following estimates of the percentage of professional and practical nursing homes in each HSA which offer physical therapy, occupational therapy, and speech therapy are determined by the presence of therapy staff.

<u>Physical Therapy</u>			<u>Occupational Therapy</u>			<u>Speech Therapy</u>		
HSA I	-	35%	HSA I	-	34%	HSA I	-	34%
HSA II	-	36%	HSA II	-	16%	HSA II	-	19%
HSA III	-	53%	HSA III	-	30%	HSA III	-	22%
HSA IV	-	48%	HSA IV	-	23%	HSA IV	-	19%
HVA V	-	35%	HSA V	-	26%	HSA V	-	28%

It is important to note, however, that these numbers may be low if some facilities were not included because they have no resident therapy staff even though they make a service available.

In the areas of home health, of the 114 counties in Missouri:

- 26 counties have no home physical therapy from a certified home health agency;
- 59 counties have no home occupational therapy from a certified home health agency;
- 62 counties have no speech therapy from a certified home health agency.

Map A-M-1 in the appendix under Maintenance Services, illustrates home therapy availability in each county. When compared to equivalent data in the 1978 State Health Plan, more overall counties are served with in-home physical and occupational therapy although some individual counties have lost those services. For speech therapy, a number of counties no longer have that service available to them and, overall, there has been a slight decrease in the number of counties served.

Accessibility

The issues related to the shortage of Medicaid nursing home beds are relevant here. Additionally, the reader is advised to see Nursing Homes in Maintenance Services.

In the home setting, health services are more accessible for the Medicaid patient who is eligible to receive Medicare because Medicare provides for a broader range of services. Medicaid does not reimburse for therapy delivered in the home at present. For the Medicaid patient who is under 65 and who needs this type of care, limitations in reimbursement would increase the probability of placement in a "reimbursable" institution. To allow for the most cost-effective use of the rehabilitation care dollar, there should not be incentives for inpatient care and corresponding reimbursement barriers to home care. An expansion of Medicaid reimbursement to cover home therapy programs would help to correct the problem.

Cost

Data is not available on the utilization of therapy services in nursing homes in Missouri. The belief that patients do not receive enough therapy for maximum benefit has long been held. It also has been speculated that purchased therapy equipment is sometimes not sufficiently utilized to be cost-effective.

Staffing through contractual arrangements has been successful in home health agencies. It is often a good vehicle to meet staffing needs cost effectively and in a way that efficiently utilizes manpower resources.

Quality

See Chapter III, Maintenance Services, Chronic Disease Care and Nursing Homes for a discussion of quality in-home care and nursing home care.

Continuity*

Acceptability*

Problem Description

Availability

A large percentage of nursing homes which do offer therapy services are professional homes. In rural Missouri, the lessened availability of therapy services correlates with a larger proportion of homes providing more custodial care and also with manpower problems. Manpower resources which are limited in some areas could be pooled locally so that therapy services could be available in all settings including hospitals, nursing homes, and patient's homes.

Accessibility

See Chapter III, Maintenance Services, Nursing Homes for a discussion on Accessibility issues as they relate to nursing homes.

To allow accessibility to therapy in the patient's home, initiatives to expand Medicaid's scope of services in the home should be examined. The present inaccessibility is one of a myriad of reasons for the degree of inappropriate insitutionalization which is believed to occur in Missouri. Of particular importance would be reimbursement for physical therapy.

Cost

As services are expanded to meet area needs, attention should be paid to their maximum utilization by the patient population and to the most efficient means of making the services available. Local nursing homes and home health agencies should explore sharing professional therapists to their mutual benefit.

Quality

See Chapter III, Maintenance Services, Chronic Disease Care and Nursing Homes for a discussion of quality issues as they relate to home care and nursing home care.

Continuity*

Acceptability*

Goals, Objectives, and Actions

GOAL: BY 1984, THE OVERALL AVAILABILITY OF THERAPY SERVICES IN THE PATIENT'S HOME AND IN THE NURSING HOME SETTING SHOULD BE INCREASED BY 25 PERCENT IN ORDER THAT MORE PATIENTS MAY BENEFIT FROM THERAPY SERVICES OUTSIDE THE HOSPITAL SETTING.

OBJECEIVE 1: By 1984, the percentage of nursing homes providing physical therapy should be at least 45 percent in all health service areas.

OBJECTIVE 2: By 1984, the percentage of nursing homes providing occupational therapy should be at least 30 percent in all health service areas.

OBJECTIVE 3: By 1984, the percentage of nursing homes providing speech therapy should be at least 30 percent in all health service areas.

OBJECTIVE 4: By 1984, the number of certified home health agencies offering home therapy care should increase their service capacity in order to reduce the number of unserved counties by 50 percent.

OBJECTIVE 5: By 1981, Medicaid should reimburse home services for physical therapy.

OBJECTIVE 6: By 1983, Medicaid should reimburse home services for occupational therapy and speech therapy.

ENDNOTES

¹Area II Health Systems Agency, 1978 Health Systems Plan (Moberly, Missouri, 1978).

²Allen Chase, The Biological Imperatives: Health, Politics, and Human Survival, Holt Rinehart and Winston, (1971, New York) pps. 125-126.

³Mid-America Health Systems Agency, 1979 Draft Health Systems Plan (Kansas City, 1979) p. 9 (of Rehabilitation Services).

⁴Mount Saint Rose Hospital, "The Need to Fund Day Hospital Programs for the Elderly," (St. Louis, 1978), p. 3.

⁵Leonard Policoff, M.D. "Rehabilitation Medicine Revisited," Archives of Physical Medicine and Rehabilitation, Vol. 54, No. 1 (January, 1973), p. 3.

⁶Mid-America Health Systems Agency, op.cit., p. 12.

⁷Mid-America Health Systems Agency, op.cit., p. 4.

⁸Mount Saint Rose Hospital, op.cit., p. 6.

⁹Missouri Department of Mental Health, Missouri State Plan for Developmental Disabilities Services and Facilities Construction Program for Fiscal Year 1978, (Jefferson City, 1978), p. 2.

¹⁰Ibid., p. 2.

¹¹Ibid., p. 31.

¹²Ibid., p. 324.

¹³Ibid., p. 72.

¹⁴Ibid., p. 20.

¹⁵Ibid., p. 22.

¹⁶Ibid., p. 22.

¹⁷Ibid., p. 39.

¹⁸Ibid., p. 89.

¹⁹Ibid., p. 42.

²⁰Ibid., pps. 22-23.

²¹Ibid., p. 90.

²²Ibid., p. 41.

²³Benjamin Miller and Clare Brackman Keane, Encyclopedia and Dictionary of Medicine and Nursing, (W.B. Saunders, 1972), p. 738.

²⁴Ibid., p. 670.

²⁵Ibid., p. 975.

ANCILLARY SERVICES

"Mechanisms which facilitate the provision of health services."

SYSTEMS DEVELOPMENT

*"Organized activities designed to influence the means by which,
and the conditions under which, services are delivered."*

A. PLANNING

INFORMATION FOR HEALTH PLANNING

Desired System

The development of a comprehensive and flexible computer-based information system to assist individuals involved in health planning and project review is essential. As more and more emphasis is given to the preparation of health systems plans and implementation strategies, to the development of criteria and standards for project review, and to the projection of future requirements of the health care system, there is an increasingly urgent need for an efficient information system.

The variables in this information system must allow planners, policy makers, consumers, providers, and decision makers to address the following issues about health care resources--what they are, who uses them, how much is being spent, and what are the benefits derived. This information system, as any system, should be flexible enough to change and adapt as the environment in which it is being used changes. The purpose of this system is to provide a mechanism through which data can be efficiently stored, retrieved, presented, and analyzed.

The system should be designed in such a manner that, when data gaps are identified, the capability exists to expand and produce statistical information to complete these gaps. A continuous program for improving data and statistical methods must be incorporated into the system. This requires a program which is dynamic and flexible with the capacity to adjust to changing conditions and changing needs. In relation to each of the data efforts, the statistical service should be descriptive, evaluative, and monitorial.¹

Comparative Analysis

While a good information system will never be able to guarantee good health planning, a poor information system does ensure poor health planning. In recognition of this, P.L. 93-641 is very explicit about the minimum issues on which health systems agencies are required to assemble and analyze data:

1. The status (and its determinants) of the health of the residents of its health service area;
2. The status of the health care delivery system in the area and the use of that system by the residents of the area;
3. The effect the area's health care delivery system has on the health of the residents of the area;
4. The number, type, and location of the area's health resources including health services, manpower, and facilities;
5. The patterns of utilization of the area's health resources; and

6. The environmental and occupational exposure factors affecting immediate and long-term health conditions.²

Problem Description

Before a comprehensive information system can be implemented, basic data need to be collected which are uniform, complete, pertinent, and detailed. A priority consideration in the development of a data system for health planning is the implementation of a uniform reporting mechanism for hospitals. There is a need to minimize the expensive burden imposed by duplicative reporting of information by hospitals to various users. A single set of data should be developed which would serve multiple users. To facilitate planners and decision makers in determining the probable results of any intervention strategy, information must be supplied that is concerned "not only with hospital financial data, i.e., historical and projected costs and volumes of activity, but also with the linkage of such data with information on the service complexity of hospitals, their physician mix, their utilization patterns (patient origin and discharge data), the diagnostic and age characteristics of their patients, and with population-based statistics."³

In order to address the accountability issue, information is also needed on health care expenditures within Missouri. To answer questions regarding the benefits derived from expenditures on health care, information on the volume of expenditures, the type of expenditures, the type and distribution of health resources, the utilization of services, health status, and source of funds is required.

Goals, Objectives, and Actions

GOAL: TO ENSURE THE AVAILABILITY AND ACCESSIBILITY OF A COMPREHENSIVE AND FLEXIBLE COMPUTER-BASED INFORMATION SYSTEM.

OBJECTIVE 1: By 1982, a uniform and comparable data reporting system for all hospitals in Missouri should be developed.

Recommended Action 1: By 1981, all hospitals within Missouri should have agreed upon a common reporting form (either Medicare or some other similar form).

Recommended Action 2: By 1981, all hospitals within Missouri should have entered into an agreement to utilize a uniform reporting mechanism to collect a minimum set of information.

III-PL-3

Recommended Action 3: By 1979, planning agencies under P.L. 93-641 should coordinate efforts to develop a common reporting request form for hospital discharge data.

Recommended Action 4: The Missouri Health Data Corporation should act as the collector of data and guarantor of confidentiality.

ENDNOTES

¹"Computer-Based Information System," Missouri Health Manpower Linkage Project (June 1976), pp. 1-4.

²Public Law 93-641, National Health Planning and Resources Development Act of 1974, Section 1513.

³Katharine G. Bauer, Improving the Information for Hospital Rate Setting, Final Report DHEW Contract #600-75-0142 (Boston: Harvard University, Center for Community Health and Medical Care, September, 1976), p. 3.

B. RESOURCE ALLOCATION

ISSUES IN HEALTH MANPOWER

Introduction

Health manpower refers to all individuals engaged in a wide spectrum of activities associated with the provision of health care. These activities are provided in a variety of settings (e.g., hospitals, nursing homes, private offices, industry, educational institutions) and require diverse levels of education (extending from a few days of on-the-job training to several years of professional education plus speciality training.)

"The 'need' for medical personnel depends on the demand for medical services and on the quality of services a given amount of personnel can and is prepared to offer. Both the demand and the supply change over a period of time. The former is affected as the health and socio-economic characteristics of the population alter, as research in medicine advances and as government helps transform medical needs into demands by instituting new medical services or financing programs. The latter changes as new patterns of medical organization come into being, as new types of personnel are trained and new technology is developed, and as the productivity of personnel changes."¹

Desired System

Within the health care delivery system, a continuum must be developed in which the development, maintenance, and distribution of appropriate skills and numbers of health care personnel adequate to serve the population are provided. The services provided by these professionals should be accessible as measured by availability of services, the ability of an individual to obtain services, and the comprehensiveness of services offered.

"Ideally, manpower resources should be a derivative function of health services needed to achieve specified health goals and those in turn translated into manpower requirements."² However, estimates of manpower requirements cannot be addressed in isolation; they must be integrated with other facets of the health care delivery system. A mechanism should be developed which permits local identification and translation of health service requirements into corresponding manpower requirements. In order to do this, an understanding of the functioning of the health care delivery system is needed. It must also be understood that the demand for medical services is really a demand for the elusive commodity 'better health.' When analyzing the need for a given type of service, all levels of providers contribution to that service must be considered if a more efficient mechanism is to be determined.

When analyzing health service requirements, emphasis should be placed on the most economical way of providing the specified level and quantity of services. In order to utilize a given pool of manpower with reasonable efficiency, consideration must be given to the productivity and cost of the factors involved. There are several possible methods for reducing costs:

One way is through the substitution of equipment for additional manpower: Given the costs of manpower and equipment, is it economical to use an auto-analyzer instead of additional laboratory personnel? Another approach is through task delegation, to economize on the use of the scarcer, more costly manpower by delegating less exacting tasks to less costly personnel as far as is consistent with good medical practice, thus increasing the effective supply of services by the more expensive types Productivity increases may stem from technological advances as well as from the realignment of tasks. In fact, these two factors often go hand in hand.³

When considering the possibility of task delegation, consideration must be given to the qualifications of the personnel, their legal basis for performing services, and public and professional acceptance of auxiliary personnel. One such type of auxiliary primary care provider is the physician assistant. This provider should be trained (and have the legal basis) to perform high quality primary care without the physician's presence in the same room, although the physician should be present on the premises. By handling the more routine tasks, the physician assistant can free the more highly trained physician for more complicated tasks.

Comparative Analysis

The fundamental problems facing the health care delivery system with respect to health manpower are the provision of the right number of personnel of the right kind in the right place. In recent years, numerous attempts, resulting in a wide variety of conclusions, have been made to determine the adequacy of the supply of health manpower and the corresponding services. A basic reason for this wide disparity in views concerning the adequacy of the manpower supply is that no universally accepted theoretical framework has been developed. Therefore, when comparing the results obtained by various authors, all assumptions must be considered as well as the theoretical framework and models used.

It is generally agreed that a problem exists in American health care. The problem, however, is not simply one of numbers of manpower. Additional manpower may be needed over time to meet the changing demands of the population; but if additional personnel are employed in the present manner and within the present patterns and 'systems' of care, they will not alleviate the current problems and may, in fact, compound them. "Unless we improve the system through which health care is provided, care will continue to become less satisfactory, even though there are massive increases in costs and numbers of personnel . . ."4

During 1977, there were over 175 educational programs in Missouri providing training for more than 60 different health occupations.⁵ In spite of this, there are still difficulties with distribution and

utilization of health manpower services in Missouri. There are certain areas within the inner cities and in rural Missouri that are medically underserved.

For a three-year period ending in June, 1977, a Health Manpower Linkage Project was conducted which analyzed the requirements for health manpower within Missouri. This project looked at the health professional groups of dentists, pharmacists, physicians (M.D. and D.O.), podiatrists, optometrists, nurses, and veterinarians, as well as a few selected groups of allied health personnel closely associated with these professional groups. An attempt was made in these studies to determine the overall need for additional manpower within Missouri and to determine areas within the State that were currently experiencing a shortage of manpower services. In general, it was found that Missouri, like the rest of the United States, was experiencing problems with distribution and utilization rather than one of overall shortages.⁶

One possible method for easing these problems is the utilization of physician assistants. While there are many types of physician assistants working in the United States, they can usually be categorized into the following three levels which are distinguished by the nature of the service each level is best equipped to render and the amount of medical knowledge and judgment required:

The Type A assistant is capable of approaching the patient, collecting historical and physical data, organizing these data, and presenting them in such a way that the physician can visualize the medical problem and determine appropriate diagnostic or therapeutic steps. He is also capable of assisting the physician by performing diagnostic and therapeutic procedures and coordinating the roles of other, more technical assistants. He is distinguished by his ability to integrate and interpret findings on the basis of general medical knowledge and to exercise a degree of independent judgment.

The Type B assistant, while not equipped with general knowledge and skills relative to the whole range of medical care, possesses exceptional skill in one clinical speciality. Because his knowledge and skills are limited to a particular speciality, he is less qualified for independent action.

The Type C assistant is capable of performing a variety of tasks over the whole range of medical care under the supervision of a physician, although he does not possess the level of medical knowledge necessary to integrate and interpret findings. He is similar to a Type A assistant in the number of areas in which he can perform, but he cannot exercise the degree of independent synthesis and judgment of which Type A is capable.⁷

While Missouri does not currently have legislation dealing with the utilization and role of physician assistants, forty-one other States have such legislation which is primarily of two forms: general delega-

tory or regulatory authority. General delegatory legislation consists of an amendment to the medical practice act of that particular State which permits physicians to utilize these assistants under their supervision and control. In other words, individual physicians have sole responsibility for delegating the functions which will be performed by this individual, based on the physician's assessment of that individual's capabilities. States which have enacted regulatory authority statutes appoint an organization within the State, usually the State Board of Medical Examiners, as the responsible agent for the registration and regulation of physician assistants.

Since Missouri does not have enabling legislation which defines the roles and legal responsibilities of physician assistants, few practice within the State (in 1975 there were only 37).

Problem Description

The three most important issues in an analysis of the health manpower area are: the supply, the geographical distribution, and speciality distribution of the health manpower. "Many manpower experts feel that absolute supply is no longer an important issue in many or most types of health manpower, but that the issues are geographic and specialty distribution of the currently available manpower. While this may be true, it is still necessary to have a reasonable grasp of the current and projected supply situation in order to approach the other issues in an intelligent manner."⁸

When planning for the requirements of health manpower, however, it must be recognized that it is wasteful to provide for manpower that will be unused. Not only should consideration be given to the 'needs' of the population, but also to their ability and 'wants' concerning utilization of services. When estimating requirements for health manpower, several related health occupations should be analyzed together rather than singularly. Such a strategy will allow a greater consideration to be given to possible substitutions and complementarity among manpower categories. A specific program of health services can be provided by alternative combinations of personnel and facilities.

An essential element in an evaluation of the adequacy of the supply of health manpower is an inventory of that supply. Although improvements are being made, many problems exist today in obtaining relevant, reliable data on most health manpower occupations. Unless the occupation is licensed, it is virtually impossible to obtain even a head count on active personnel. Another area where information is almost nonexistent is in the 'pool' of potential personnel, that is, those who are trained but not active and might be persuaded to re-enter the market under certain circumstances.

In general, national health manpower policy has relied almost exclusively on educational strategies designed to increase the supply of personnel. A shortcoming of such a strategy is that emphasis is placed on means rather than ends (manpower rather than services) and ignores alternative methods of delivering health care services induced by man-

power substitutions and technological changes as well as alternatives to the use of such services per se. The fundamental issue here appears to be an imbalance between desired and observed patterns of manpower utilization.

One alternative, the employment of physician assistants by primary care physicians, can have an impact on the level and cost of health care being provided. In a survey conducted by the United States General Accounting Office, it was noted that the employment of a physician assistant increased the number of patients served, as well as freed the physician to spend more time with each patient and to handle the complicated cases.⁹ Other studies have been undertaken which show that a physician assistant can increase the productivity of a primary care physician from 30 to 80 percent, depending upon their method of utilization and practice.

Finally, it is important to recall that health manpower is not a goal in itself but a means for providing services to a population. These services should be provided to the extent that they make a worthwhile contribution to the health of the population.

Goals, Objectives, and Actions

GOAL: TO ENSURE THE DEVELOPMENT, MAINTENANCE, AND DISTRIBUTION OF APPROPRIATE SKILLS AND NUMBERS OF HEALTH CARE PERSONNEL ADEQUATE TO EFFECTIVELY AND EFFICIENTLY SERVE THE POPULATION.

OBJECTIVE 1: By 1983, the distribution of manpower services should be improved so that services are more readily available and accessible in a cost-effective manner to 50 percent of the areas designated as underserved by the Department of Health, Education, and Welfare (DHEW).

As stated in the reports prepared by the Missouri Health Manpower Linkage Project, State Health Planning and Development Agency (SHPDA), recommendations were made for improving the health care services in Missouri. While many of the recommendations were for a particular manpower group, a central concept among all groups appeared. The recommended actions which follow are basically derived from these reports:

Recommended Action 1: By 1980, efforts should be made by the State Health Planning and Development Agency (SHPDA), the Health Systems Agencies (HSAs), and the professional associations to establish a statewide placement service which would contain information on shortage areas and a current list of available practices and practitioners who are seeking associates and/or partners. Community profiles on areas requiring professional services should be available to any practitioner seeking a practice location.

Recommended Action 2: Individual communities within an area identified as having a shortage of health care services should consider the following alternatives in attracting practitioners to the area: providing financial aid to students; paying travel expenses for the potential candidate to view the community; providing for overhead expenses incurred in establishing a new practice in the community; and/or making arrangements to guarantee a new practitioner a specified income during an initial period.

Recommended Action 3: By 1980, the legislature should enact a regulatory authority bill pertaining to physician assistants.

This legislation should define a physician assistant (Type A) as an individual who is:

- A. Board eligible (and/or certified) as a graduate of a formal, accredited Type A physician assistant program; or
- B. Board certified and whose eligibility to sit for the examination was based on practical experience as set forth in the following criteria:
 - 1. High school diploma or equivalent certificate;
 - 2. Four years of medical clinical experience in primary care as a physician assistant since January 1, 1979 (this experience must be within the United States or the United States Armed Forces); and
 - 3. Meet specified criteria concerning the nature of work experience.

The national certifying examination for assistants to the primary care physician is designed to assess the candidates' knowledge and competency in applying that knowledge to the clinical problems and conditions prevalent in the primary health care setting.

This legislation should allow the physician assistant to practice without the actual visual supervision of the physician. While the presence of a physician on the premise is desired, to require the physician assistant to work within the visual presence of the physician would sharply curtail the potential effectiveness of the auxiliary personnel. It is not the intent to initiate legislation which would enable a physician assistant to establish a private practice, but only to legally define the roles and responsibilities of physician assistants to assist physicians.

Recommended Action 4: Modification of the present health care delivery system should take into consideration such factors as:

- a. Satellite clinics in rural and urban underserved areas staffed by rotating primary care physicians, physician assistants, and nurse practitioners.
- b. Direct incentives to groups of physicians in established practices to expand their services to the surrounding underserved areas.
- c. Organize speciality support systems statewide for family practitioners in isolated areas. All family practitioners in isolated areas should have direct telephone service to medical centers in the State for immediate consultation with specialists.
- d. Possible revisions in medical and osteopathic school admission policies to place more emphasis on placing students in the inner cities and rural areas.

Recommended Action 5: Any new or additional State and Federal monies to subsidize residents should be awarded to medical and osteopathic schools in Missouri who desire to increase residencies in the primary care specialties, especially family practice.

Recommended Action 6: By 1981, the State Health Plan should include an analysis of the adequacy of the numbers and distribution of health practitioners (to be repeated periodically) in order to monitor changes in the health care delivery system.

Even if an ideal staffing pattern for the delivery of services to a community, area, or State could be envisioned at this time, the continuing development of new knowledge and techniques, new patterns of services, and new methods of payment are all constantly changing the requirements for both the numbers and varieties of health manpower.

ENDNOTES

¹Rashi Fein, The Doctor Shortage: An Economic Diagnosis, (Washington, D.C.: The Brookings Institution, 1967), p. 22.

²Robert F. Knouss, "Health Manpower -- The Right Kind", Health Manpower Issues -- A Presentation at the White House (November 13, 1975), p. 19.

³U.S. Department of Health, Education, and Welfare, Methodological Approaches for Determining Health Manpower Supply and Requirements, Volume 1 -- Analytical Perspective, DHEW Publication No. (HRA) 76-14511 (1976), pp. 66, 70.

⁴Report of the National Advisory Commission on Health Manpower, Volume I, (Washington, D.C.: Government Printing Office, November 1967), pp. 2-3.

⁵Patrick Hurley, Selected Health Occupations -- Educational Programs in Missouri, 1977, State Health Planning and Development Agency, Health Manpower Planning, (April 1977), p. i.

⁶For further information see the Missouri health manpower analyses reports on the seven professional categories prepared by the Health Manpower Linkage Project staff during 1975-1977.

⁷National Academy of Sciences, Ad Hoc Panel on New Members of the Physicians Health Team, "Report on Physician Assistants," (May 1970), pp. 10-12.

⁸John C. Dalton, "Equal Access to Health Care -- The Manpower Issues," Health Manpower Issues -- A Presentation at the White House (November 13, 1975), p. 6.

⁹U.S. Congress, General Accounting Office, Progress and Problems in Training and Use of Assistants to Primary Care Physicians, MWD-75-35 (April 8, 1975), p. 33.

¹⁰National Academy of Sciences, op.cit.

C. FINANCING AND COST EFFECTIVENESS

INFLATION IN THE COST OF HEALTH CARE SERVICES

Desired System

The level of price inflation of health care services should not exceed the level of general price inflation. By analyzing the relative level of inflation, contributing conditions specific to the health care industry can be identified:

People are concerned about the relative price growth for at least two reasons. First, it represents a redistribution of income to the providers of health care services away from the providers of all other services in the economy. Second, lower income families spend a higher percent of their income on medical care. An increase in its relative price will have a disproportionate impact on the poor.¹

The proposed solutions to the problem of spiraling cost inflation in health care services fall within three broad categories: 1) improve the market to more closely resemble efficient markets in other sectors; 2) compensate for the poor market structure through planning and public utility-type regulations; and 3) replace the economic market with a political market by nationalizing the industry.

Comparative Analysis

"In the past twenty-four years, the price of medical services has gone up 1.5 times as fast as the consumer price index."² As a result of this unrelenting spiral in the cost of health care services, consumers must purchase a relatively smaller basket of other goods and services. While a variety of articles have been written on the cause of inflation and potential solutions to it, several basic structural defects are, in general, recognized as major contributors to health care cost inflation:

1. Fee-for-service and cost-plus reimbursement neither encourage nor reward cost containment, and in fact, encourage cost growth;
2. Historically, methods of third-party reimbursements provide little or no controls over rising prices;
3. Insufficient competition exists within many segments of the health industry, so that market forces that exist in other sectors to induce increased productivity and efficiency are largely absent in the health care sector;
4. First-dollar insurance coverage reduces cost-consciousness on the part of consumers;
5. Consumers lack the required knowledge to enable them to become aggressive, informed purchasers of health care;³ and

6. Consumer expectations as to the capability of modern medical technology have risen and may be inflated.

The presence of any or all of these structural defects leads to substantial wastes in the health care delivery system through unnecessary hospitalization, over expansion of facilities, and over utilization of various services. At the same time, however, because of financial barriers and/or the maldistribution of resources, some individuals are unable to gain access under the current system.

Problem Description

The rapid rate of inflation in the price of health care services limits the nation's flexibility in choosing alternative expenditures. In order to curtail the rapid rise in health care costs, a comprehensive long-term strategy for altering the structure and functioning of the system needs to be developed. Three methods for controlling costs have been proposed:

1. ...reorient physicians and other health care providers to change their behavior -- to use less costly modes of delivering services, particularly preventive and ambulatory services, to use nurse practitioners or physician assistants, and to change incentives of present reimbursement systems to increase cost consciousness among providers of care;
2. ...restructure the financial incentives faced by providers through techniques such as prospective reimbursement, influence the allocation of scarce health resources (particularly capital expenditures), and improve the geographic distribution of health manpower and other crucial health resources through improved health planning at the State and local level; and
3. ...educate the consumer to use the health care system more appropriately and effectively and to emphasize prevention and positive health maintenance.⁴

Goals, Objectives, and Actions

GOAL: TO ENSURE THAT THE LEVEL OF MEDICAL PRICE INFLATION DOES NOT EXCEED THE LEVEL OF GENERAL INFLATION.

OBJECTIVE 1: By 1983, changes within the total market structure of the health care system should be implemented which will lower the level of medical price increases so that it is more than 1.25 times the level of general price increases.

Recommended Action 1: By 1980, an educational strategy should be initiated to provide consumers with more information about the structure of the health care market and prices within the system.

Recommended Action 2: By 1981, a study should be conducted analyzing the feasibility of prospective rate reimbursement for hospitals.

Recommended Action 3: By 1981, a prospective rate reimbursement mechanism should be implemented for nursing homes.

Recommended Action 4: By 1981, changes in the methods of third-party reimbursement (i.e., first dollar coverage) for health services should be researched and appropriate action implemented.

Recommended Action 5: By 1981, a study describing the benefits and costs of rate regulation/review should be conducted.

Recommended Action 6: By 1980, a study describing the strengths and weaknesses of utilization review should be conducted.

ENDNOTES

¹Theodore R. Marmor, Donald A. Wittman, and Thomas C. Heagy, "Politics, Public Policy, and Medical Inflation," Michael Zubkoff (ed.) Health: A Victim or Cause of Inflation (New York: Prodist, 1977), p. 301.

²Ibid., p. 299.

³Michael Zubkoff, "Health Report to the White House Summit on Inflation," Michael Zubkoff, (Ed.), Health: A Victim or Cause of Inflation (New York: Prodist, 1977), pp. 1-2.

⁴U.S. Senate Hearings Before the Subcommittee on Health of the Committee on Labor and Public Welfare, Inflation of Health Care Costs - 1976 (Washington, D.C., 1976).

CHAPTER IV: PRIORITY AREAS FOR IMPLEMENTATION

Priorities for implementation in 1980 are based on the established priority areas as defined by the SHCC in the first project year.* These top four priorities with the accompanying potential activities are as follows:

Health Education

1. School health education program development and assistance for local school districts.
2. Promotion of health education in business and industry through better cooperation with both management and labor.
3. Increased support of activities promoting "well person maintenance" including development of wellness centers.
4. Other appropriate actions needed to implement the health education section of the Missouri State Health Plan.

Primary Care

1. Development of a model rural health care delivery system in rural Missouri.
2. Development of an implementation methodology in order to be able to transpose the rural health model to any area of the state.
3. Promote the use of physician extenders and a law to define their use.
4. Provide staff help to the Governor's Rural Health Care Task Force to identify other health problems and implement actions as previously defined.

Mental Health

1. Co-development with the Department of mental Health of a model mental health care center or system.
2. Co-development of needs assessment realistic for use by the Missouri HSAs.
3. Continued work with the Department of Mental Health in addressing specific identified problems in alcohol or substance abuse (e.g., fetal alcohol syndrome).

Services for the Aged

1. Promote the appropriate use of generic drugs for health care costs saving.
2. Provide technical assistance in the implementation of nursing home quality reform efforts resulting from legislative mandate.
3. Provide technical assistance to the planning efforts initiated by the new Division of Aging in the Missouri Department of Social Services.
4. Participate in efforts by the Department of Mental Health and other agencies to document and decrease the prevalence of substance abuse and medication misuse, particularly with respect to the aged population.

Other possible areas for implementation activities include the development of a state employees Health Maintenance Organization and development of an environmental health interagency council within the state government.

*NOTE: AFTER COMPLETION OF THE STATEWIDE NEEDS AND PRIORITIES AND DEVELOPMENT OF A PRIORITY SETTING TOOL, THERE WILL BE A RE-EVALUATION OF THE PRIORITY AREAS FOR IMPLEMENTATION.

The Missouri SHPDA is always willing to assist any individual, agency, or organization wanting to implement any part of the approved Missouri State Health Plan.

CHAPTER V: PRIORITY AREAS FOR PLAN DEVELOPMENT

The Missouri State Health Plan is a dynamic and changing document which must be flexible to respond to changing statewide needs. As time goes on, the plan should increase in comprehensiveness and quality as additional and updated information becomes available and as planning methodologies are refined. It is recognized that this third edition of the Missouri State Health Plan has not fully addressed all health issues raised by the Missouri Health Coordinating Council. However, in a step-by-step analytical method, this will be accomplished.

Appropriateness Review

Rules and regulations for appropriateness review, which is the determination of the conformance of existing health services and facilities to a set of criteria and standards, were developed and published in the December 11, 1979 Federal Register. The SHPDA has agreed with the Missouri HSAs on an appropriateness review schedule to be initiated within this next project year.

Description of the State

Following the release of preliminary 1980 census data, annual improvements will be made in the timeliness of certain data. For example, preliminary population projections and vital statistics for the state will be included in annual updates of the Plan following the census. In addition, this analysis will be expanded to include further demographic and economic indicators of the composition and structural aspects of the population in the state.

Health Status

In revisions of the Missouri State Health Plan there will be an expansion of the health status component beyond present emphasis on mortality. The present data will be reassessed and updated with greater emphasis on comparing trends and identifying root causes for changes in rates. Costs of preventable diseases, injuries, and deaths and their impact on Missouri will be analyzed with respect to the potential health systems interventions. A data base for an environmental health study will be developed concomitantly, and efforts to make cancer a reportable disease will be undertaken. A comparative analysis of health status as it relates to socio-economic and demographic variables will also be initiated.

Health System

In future editions of the Missouri State Health Plan, data will be revised, updated, and incorporated in the appropriate sections. As quantifiable indicators are developed, additional components will be incorporated into the appropriate sections. Areas already included in the State Health Plan will be more completely analyzed as additional and updated information and methodologies become available.

The Health Promotion and Health Protection components will be expanded with a more complete analysis of well person maintenance. Environmental health issues will also be more fully developed and a risk analysis initiated based on an assessment performed by the proposed Environmental Health Task Force.

An expansion of the Individual Prevention, Detection and Referral Services component will evaluate the impact of adult immunizations and assess the possible shortcomings. Detection Services will also be analyzed for the first time.

A more complete analysis and revision of Diagnostic and Treatment Services will be undertaken. A great deal of the data used in the analysis of the health system must be updated yearly due to the tremendous changes on the part of the health system. In particular, analysis of alternative birth delivery settings will be developed as well as a more extensive analysis of health promotion activities. The section on Outpatient/Primary Care Services will be expanded to include free standing outpatient departments. An analysis of Dental Health Services will also be developed. The entire area of Mental Health is important from both an administrative and planning perspective. Cooperative development of the mental health component with the Department of Mental Health based on a signed agreement is also planned. Greater emphasis will also be placed on improving and expanding the analysis of sophisticated medical services such as CT Scanning, Radiation Therapy, Surgical Services, and End Stage Renal Disease Services through the analysis developed in the Medical Facilities Appendix.

Habilitation and Rehabilitation Services will be updated with additional quantitative analysis of hospital based rehabilitation beds. Health Maintenance Services will also be updated and expanded with further analysis of the appropriateness of hospital and institutional based long-term care beds being linked to the Medical Facilities Appendix. Nutrition Services for the aged will also be explored.

The effect of cost on the health system and the development of manpower resources will be expanded under Systems Development component.

Priorities within and among each new section, in addition to all those sections that are to be updated, revised, or expanded will be established as a basis for priority implementation in next year's edition of the State Health Plan.

Medical Facilities Plan - Appendix

Development of the Medical Facilities Appendix will finally come to fruition with completion of a document that includes an inventory of medical facilities, a survey of the physical plants, and need projections. The Medical Facilities Appendix will form the basis for Certificate of Need review decisions and for planning the scope and direction of the health system in Missouri.

Organization and Management

Improved coordination and communications with the HSAs is the cornerstone of the planning effort. There has been sincere effort among all parties to develop a logical method "of doing business." The Missouri SHPDA/SHCC will strive to improve on past efforts and attempt to tap those areas of expertise found among volunteers and professional planners within all the planning agencies in the state. Also, as part of this effort, task forces or advisory groups will be formed to provide leadership to both the staff and the Plan Development Committee in addressing both technical and emotional issues. These groups will be composed of a cross section of experts in the particular field, Plan Development Committee members, and other interested parties.

